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Alienist and Neurologist

A OUARTERLY JOURNAL

SCIENTIFIC, CLINICAL AND FORENSIC

Psychiatry and Neurology.

Intended especially to subserve the wants of the General Practitioner of Medicine.

"Quantam ego quidem video motus morbosi fere omnes a motibus in systemate nervorum ita pendent, ut morbi fere omnes quodammodo Nervosi diel queant."—Cullen's Nosology: Book II., page 181—Edinburgh Ed. 1780.

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-EDITED BY-

C. H. HUGHES, M. D.,

And an associate corps of collaborators.

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Contributors to Volume X.

CLARK BELL, Esq.,

New York.

L. BREMER, M. D.,

St. Louis, Mo.

H. A. BUTTOLPH, M. D., LL. D.,

Short Hills, N. J.

T. D. CROTHERS, M. D.,

D., Hartford, Conn.

S. V. CLEVENGER, M. D.,

Chicago, III.

CHAS. L. DANA, A. M., M. D.,

New York.

J. T. ESKRIDGE, M. D.,

Denver, Col.

J. MILNER FOTHERGILL, M. D.,

London, England.
C. H. HUGHES, M. D.,

St. Louis, Mo.

HENRY HULST, M. D.,

Michigan,

JAS. G. KIERNAN, M. D.,

Chicago, Ills.

J. H. McBRIDE, M. D.,

Milwaukee, Wis.

WILLIAM OSLER, M. D.,

. ,

PhiladeIphia, Pa.

HALDOR SNEVE, M. D.,

Dayton, Ohio.

G. SEPPILLI, M. D.,

lmola, Italy.

Italy.

FRANCESCO SPALLITTA, M. D.,

JOSEPH WORKMAN, M. D.,

Toronto, Canada.

T. L. WRIGHT,

Bellefontaine, Ohio.

ALIENIST & NEUROLOGIST.

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ORIGINAL CONTRIBUTIONS.

PARANDIA.

By Jas. G. Kiernan, M. D., Chicago, Ills.

THE conception of paranoia was to be found very early in Anglo-Saxon psychiatry. This is sufficiently proven by the following case, reported by Haslam.

CASE I. A man named Matthews was, by verdict of a jury, committed to Bethlehem, in 1797. In 1798 he was removed to the incurable wards. In 1809, he was examined by two of the fashionable practitioners of the day, who, being dilettante alienists, pronounced him perfectly sane, although he was a very dangerous lunatic, having the following elaborately systematized delusion: Matthews believed that a machine had been constructed for malignant purposes, which was called an air-loom. It rivaled the human machine in this, that it operated either on mind or matter. It was invented by and worked by a gang of villains superlatively skillful in pneumatic chemistry, physiology, nervous influence, sympathy and the higher metaphysics. The gang were seven in number. The chief among them was Bill, the King, who was from sixty to seventy years old, constantly directed to wicked thoughts; no one ever saw him laugh. Jack, the school-master, the short-hand writer of the gang. Sir Archy, Chief Liar to the gang, who was forty years old, spoke in a dry, sarcastic

^{1.} Liustrations of Mainess.

manner; he wore a dirty-colored coat. The fourth, called the middle-man, was fifty-seven years old, hawk-like in aspect, and always grinning. The woman, who was called Augusta, was dressed like a country shop-keeper's wife, and had sharpish features. The next woman, a ruddy brunette, was called Charlotte. Finally, there was the glove woman, so called from her always wearing cotton mittens. This personage was never known to speak to anyone. The stuff used in the air-loom was of varied kinds,-men's and women's seminal fluid, emanations of copper and sulphur, vapor of arsenic, vitriol, aqua fortis, nightshade and hellebore, human gas, croton oil, canine fæces, etc. The effects were: 1st. Obstruction of the fluids; a knotting together of the fibres of the tongue, whereby speech was brought to a standstill. 2d. Cutting soul from sense. This is done by diffusing the magnetic warp from the roof of the nose under the base of the skull till it forms a veil, so that the sentiments of the heart can have no communication with the operations of the intellect. 3d. Dragon-flying. As boys raise a dragonkite in the air, so the air-loom can lift an idea to the brain, where it undulates for hours together. The victim cannot get rid of an idea so insinuated. 4th. Being bound down. A fettering of the judgment, in reviewing one's thoughts. 5th. Bursting of bomb-shells. An external pressure of the magnetic atmosphere. The person so operated upon feels as if he were grasped in an enormous pair of nut-crackers with teeth, and subjected to a piercing pressure, which he remembers with horror. Death sometimes results. 6th. Lengthening the brain. As the cylindrical mirror lengthens the countenance, so these assailants find means to elongate the brain. This distorts the ideas, and the most serious subjects are made silly and ridiculous. 7th. Thought-making. While one of these villains sucks at the brain of the assailed, and extracts his existing sentiments, another will press into the vacuum ideas very different from his own thoughts. Thus his mind is physically enslaved.

The philistinism of certain English alienists is aided in no small degree by the desire to increase the recovery rate by decreasing the chronic psychoses. Bell pointed out this tendency in England and America, as later did Pliny Earle. The English philistines of that epoch severely criticized Bell. This philistinism, exhibited at the last meeting of the British Medical Association, received an apt rebuke at the hands of Dr. Conolly Norman. It shows itself in the use of text-books which leave the reader and the student completely ignorant of what has been done on the continent of Europe and America in psychiatry. It seems probable that the psychiatry of Rush, Ray, Morel and Krafft-Ebing will finally be taught Englishmen by Americans. Until that day the English asylum snobs who visit the United States will continue to indicate their asininity by the statement that "practical" alienists in England (all those elected by cheese-paring rate-payers are practical) do not recognize paranoia. The brutal reign of the "practical" alienist is, however, nearly over.

In America, Rush² clearly had a conception of a congenital mental condition dependent on the absence of logical inhibitions, for he speaks of a moral imbecility. Ray must have had a similar conception, for Dr. Nichols, one of his pupils, recognized the similarity of paranoia to what Ray called imbecility of the first grade, and at the conference of experts on the Guiteau case, cited a typical Washington case in illustration. This is further borne out by the fact that Dr. Godding,³ in discussing Dr. Gray's position on the Classification of Insanity, says:

* * "It was Ray then; and I wondered, if that mental giant could come back from the shore where he has lately gone to sleep, if we should not hear some such vigorous English as this: 'You cannot get rid of a fact by denying its existence.' That is the difficulty with Dr. Gray's classification of insanity. He simplifies our psychological studies wonderfully, but what are we to do with those minds diseased which his classification leaves out to shift for themselves? We must still keep the bounds of insanity where they are, or if we narrow them with Dr. Gray, we must set up another kingdom in disease and call it unsoundness of mind. * * * Heterodox (from the Utica stand-point) I know it is, but observed facts compel to heterodox with Prichard and Esquirol, and Ray and Morel and Griesinger, and I know not how many others in recognizing a condition inherent, born in the individual and not a result of education—a condition

^{1.} Amer. Jour. of Insanity, XII.

^{2.} Medical Enquiries and Observations.

^{3. &}quot;Two Hard Cases."

which writers have recognized under various names as hereditary mental disorder, insane temperament, insane diathesis. But the difficulty is not in the nomenclature, but in getting our leaders to recognize the fact as it exists."

It must be sufficiently evident that the condition was recognized by Ray, Rush, Bell, and that American school.

The majority of foreign authors, in discussing the American bibliography of paranoia, singularly err in assigning precedence to certain authorities. The first to introduce the European (Continental) views of paranoia to the American profession was Dr. Spitzka, who discussed the condition briefly under the term paranoia. Subsequently he elaborated his views more extensively and attempted to use monomania as a synonym. Soon after the same views were announced, first by myself and then by Dr. Spitzka, on the witness stand in the Guiteau case. The ridicule then heaped on the conception of "primäre Verrücktheit" by the Utica school will be remembered with surprise when the following passage by Deecke, the pathologist of the Utica Insane Hospital, is read:

"When the question of "primäre Verrücktheit," after its acknowledgment in Germany, was brought before the public in this country it was made the occasion of an ungenerous attack on some of the most prominent of American psychiatrists, by some ill-willed and ill-informed persons, who insinuated that this form was not recognized here and that the standing of psychiatry on this continent was far behind the progress made abroad. I do not question the professional ability of the men who made the attacks, but one thing must not be forgotten: the fact showed how little personal experience they must have had with our asylums and how inadequate was their knowledge of the history of insanity in their own country."

Dr. Gray never recognized this form of insanity—hence his classification so criticised by Dr. Godding. The "ill-informed" persons, among whom were Dr. Spitzka and myself, made an attempt, so they thought, to bring the old American psychiatry of Rush, Ray and Bell to the front. They went further and attempted to realize in

Journal of Nervous and Mental Disease, 1878, p. 532.
 Journal of Nervous and Mental Disease, January, 1881.

the insane hospital the ideal of Bryce, of Brigham, of Butler, of Bell and of Earle; to make it an hospital, and not a mere place of custody. This aspect of the subject does not concern us at present.

Among those who have contributed to this subject on this side of the water have been Spitzka, Fenn, Burr, Hurd, Clevenger, Zenner, Bannister, Kiernan, Harriet C. B. Alexander, Noyes, Wyman, Bryce, C. K. Mills, and others.

Perhaps the earliest American testimony to the views about paranoia enunciated by Dr. Spitzka was my own. I quoted with approval and endorsement¹⁴ the following views expressed by him¹⁵ a year before the assassination of Garfield:

"Paranoia is based on an acquired or inherited neuro-degenerative taint, and manifesting itself in anomalies of the conceptional sphere, which while they do not destructively involve the entire mental mechanism, dominate it, that is, there is a permanent undercurrent of perverted mental current action peculiar to the individual, running like an unbroken thread through his whole mental life,—obscured, it may be, for these patients are often able to correct and conceal their insane symptoms; but it nevertheless exists, and it only requires friction to bring it to the surface. The general intellectual status, is moderately

^{1.} New York Medical Gazette, May 15, 1880.

^{2.} American Medical Weekly, 1882.

^{3.} Amer. Jour. of Med. Sciences, Jan., 1883.

^{4.} Pontiac Reports, 1882-3.

^{5.} Chicago Med. Jour. and Ex., 1883.

^{6.} Medical Record, Vol. XXXI.

^{7.} Neurological Review, Vol. I.

^{8.} Gaillard's Medical Journal, October, 1880; Journal of Nervous and Mental Disease, 1881-2-3-4-5-6; Chicago Medical Review, 1881; ALIENIST AND NEUROLOGIST, 1882-3; Neurological Review, 1886; Journal of Mental Science, July, 1887.

^{9.} ALIENIST AND NEUROLOGIST, 1887.

^{10.} Journal of Nervous and Mental Disease, 1883; American Psychological Journal, 1888.

^{11.} Medico-Legal Journal, 1888.

^{12.} Southern Clinic, 1887.

^{13.} Polyclinic, 1885; Journal of Nervous and Mental Disease, 1886.

^{14.} Gaillard's Medical Journal, Oct., 1880.

^{15.} N. Y. Med. Gaz., May 15, 1880.

fair, and often the mental powers are sufficient to keep the delusion under check for the practical purposes of life. While many are what is termed crotchety, irritable and depressed, yet the sole mental symptoms of the typical cases of this disease consist of the fixed delusions. Since the subject-matter of the delusion is of such a nature that these patients consider themselves either the victims of a plot or unjustly deprived of certain rights and positions, or, as narrowly observed by others, delusions of persecutions are added to the fixed ideas and the patient becomes sad, thoughtful or depressed in consequence. The patient is depressed logically so far as his train of ideas is concerned, and his sadness and thoughtfulness have causes which he can explain and which are all intimately allied with that peculiar faulty grouping of ideas which constitute the rendezvous, as it were, of all the mental conceptions of the patient. Nay, the process may be reversed, the patient, beginning with a hypochondriacal or hysterical state, imagines himself to be watched with no favorable eye. Because he is watched or made the subject of audible comments (illusional or hallucinatory) he concludes he must be a person of some importance. Some great political movement takes place; he throws himself into it either in a fixed character that he has already constructed for himself or with the vague idea that he is an influential personage. He seeks interviews, holds actual conversations with the big men of the day, accepts the common courtesy shown him by those in office as a tribute to his value; is rejected, however; then judges himself to be the victim of jealousy and rival cabals; makes intemperate and querulous complaints or perhaps makes violent attacks on them, and being incarcerated in a jail or asylum, looks upon this as the end of a long series of persecutions which have broken the power of a skilled diplomatist, a capable military commander, a prince of the blood, the agent of a camarilla or, finally, the Messiah Himself"

The period attendant on the transformation of perse-

cutory into megalo-maniacal delusions, or vice versa, is usually attended by casual hallucinations of marked type and frequency, which may become permanent. This period is therefore called the period of transformation. The general features of the disease seen in Haslam's case already cited are also well illustrated in the following cases. The first of these came under observation at the Cook County Hospital for the Insane and was reported by my former assistant, Dr. Harriet C. B. Alexander, in another communication:

Case II. A Canadian, came of a neurotic ancestry on both sides. In early childhood, her intellect was seemingly below that of the average child in regard to her appreciation of her surroundings. She was dreamy, moody and allowed younger children to boss her around. In childhood she was somnambulistic and subject to "night terrors." These "terrors" were succeeded by beautiful visions of an erotico-religious type at puberty; the patient, at the same time had anomalous vaginouterine sensations, which she ascribed to a love-potion sent into her system by an air-gun by an old man desirous of marrying her. She believed herself to have been impregnated in the same way, and resorted to abortifacients to remove the product of conception, which was in her "heart, lungs and throat." Under the inspiration of voices, she became addicted to secret vice as a means of placating her persecutor; clitoridectomy was performed with partial success. About this time she went to see a criminal whose crimes had attracted much attention in her neighborhood, and immediately recognized in him an ideal hero who had been cherished by her. She suffered much persecution on his account, electricity being used to produce anomalous pelvic, abdominal and pulmonary sensations. Obscene thoughts were enforced upon her by this means, and at times she was thus compelled to utter them. She, at this time, paid much attention to the study of electricity, and through its means discovered the principles of several inventions, most of them based on a discovery of perpetual motion. About the age of twentyeight her persecutions were renewed, her sister taking an active part in these, the object being to compel her to

^{1.} ALIENIST AND NEUROLOGIST, 1887.

reveal the secrets of her inventions. The same means were used for this purpose as had been used to remove her from her "persecuted hero" (the criminal aforesaid). She had, at times, olfactory hallucinations, during which she was markedly erotic. She ascribed her behavior under erotic excitement therefrom resulting, to the use of electricity by her enemies, and particularly by her sister. She later developed gustatory, visual and auditory hallucinations. Through a "patent" telephone her "persecuted hero" revealed to her that she was, as heiress to the Plantagenets, entitled to an immense fortune. Her sister being married about the time, her husband became enrolled among the patient's persecutors. He fixed up the steam pipes in such a way that electricity, conveyed through them made holes in her lungs and her womb. By means of a tube charged with electricity, her brains were sucked out and returned addled with poison. When questioned about this last persecution she said, although it might be regarded by others as an insane hallucination, she could not explain it except to the initiated. During her residence in the insane hospital these delusions were present. She frequently claimed that her head had been used as a telephone, and that her food had been poisoned, since, on sitting down to her meals she felt an electric thrill. She at times had attacks of furor, which usually resulted from visits by her sister. In her behavior she was quite dignified. The hypochondriacal delusions were, it is obvious, the outcome of anomalous sensations. The tendency to contract a marriage with a criminal was the result of a preconceived ideal, transmuted into an actual personage, as a result of public talk about noted people.

Case III. Came under my immediate observation at the New York City Asylum for the Insane. The patient was a man of illegitimate parentage who had received an excellent education, and at one time held a professorship in an academic college, which he suddenly abandoned to become a botanic physician. He wrote some works on physiology, temperance and hygiene, which are still quoted by the botanic physicians in England. He at length became convinced of the fact that the other botanic physicians were attempting to poison him, and gave up the practice of botanic medicine to secure a college tutorship, which he at length abandoned to wander to and fro,

^{1.} He was quoted in 1881. He had then been eight years in the asylum.

almost starving himself in the hope of avoiding poisoning. He was finally transferred to the asylum. He was found to have a tectocephalic, asymmetrical skull, with a flattened occiput and a protuberant left frontal skull boss. He then had markedly systematized delusions of the hypochondriacal variety of persecution, evidently secondary to delusions of grandeur. Dickens wrote Bleak House to injure him because he had greater descriptive power than The way the book injures him is by calling attention to his illegitimacy. Dickens describes an illegitimate child, Esther Hawdon, in it, and this is intended as a hit at him. He at one time had had a very interesting conversation with the landscape gardener of Central Park, and immediately subsequent to this, the latter, jealous of his ability in landscape gardening, instigated a political intrigue which resulted in his being incarcerated in an insane asylum. He had various anomalous sensations, which were due to poisons introduced into his system by his persecutors. At one time he believed that certain new abnormal sensations were produced by his enemies through the agency of electricity. His enemies used as their agent a much demented hebephreniac who was only shamming insanity. An assistant-physician pointed out to him that, according to known laws of physics, such use of electricity was impossible. The patient took a work on physics loaned by the physician, read it carefully, and returned it, stating that he was fully convinced that he was wrong about the electricity, but kept at a suspicious distance from the hebephreniac, who it was found, he now believed had bewitched him. On being asked how he, an educated man, could believe such nonsense, he said that it must be true. According to the book lent him it was impossible for electricity to have been used, and, as from the time this hebephreniac looked at him he had felt badly, his injuries must have been through witchcraft. At one time this patient had the delusion that he was pregnant by spermatozoa, introduced into his system clandestinely. He often refused to shake hands for fear of contamination, but once, whilst this delusion was in full sway, he was visited by a physician, formerly an assistant in the institution, whom he liked, and in the surprise of his visit shook hands heartily.

Case IV. At the Cook County Hospital for the Insane a patient was admitted, who in consequence of an

accidental row (in which he was not to blame) with a drunken Irishman, was arrested, and found insane, and committed to the hospital. He had an insane mother and three insane brothers. He had reached the age of sixty, but had never before been committed to an hospital for the insane. He had been, when young, regarded as a model youth, but delighted in being alone, when he had bright dreams of the future, which would have been realized but for the rapid influx of foreigners into the United States. During youth he had several times been informed by leading men, of his ability and of the part he was to play in the future history of the country. He had from time to time." visions (in what he termed the waking state) of his future." He took an active part in the Know-Nothing movement, and on its decadence became in consequence the victim of persecution. He says that in the United States there are two great parties; one foreigners, who are anti-American ("red and green"), the other Americans and intelligent foreigners who aid them ("white"). The first annoy the Americans and threaten to kill them by means of electricity. The "red and green" foreigners are mostly Irish; the "white" foreigners mostly German. To avoid the persecution by these enemies, who were determined to destroy all Americans of ability, he for years led a wandering life. He has had auditory hallucinations for years, and at one time used to argue with hallucinated voices, who, according to him, were quite logical. For eight years he has had hallucinations of smell, "potash" and "senna" and "gases." His enemies had a fixture made below his room door, a box two feet high by six or seven feet long, with a shelf in it. On the shelf was a plumber's pot on, the top of a charcoal stove. The persecutors then put the stuff in the plumber's pot, and the smells are generated by electricity. This apparatus he never saw, but heard the people making it. At night these smells frequently became so annoying that he had to arrange for special ventilation. He built a canopy over his bed, which he covered with cloth and paper, and placed this, by means of a thin tube, in connection with the open air. He applied to the police station for protection, and was incidentally told to cry "Police!" when he was tormented by the anti-Americans. For a long time this had a good effect; but at length it created such excitement that he was forced to abandon it for fear of disturbing his neighbors and bringing them

to aid his persecutors. For a few nights after entering the institution he was free from hallucinations, slept well, and was soon induced to labor at his trade (carpenter). Three months after he was insulted by a ward worker, who was desirous of diminishing the number of patients working to secure a position for a political ally. The same night his auditory and olfactory hallucinations made their appearance, and his persecuting machine was again set in motion, by, he believed, his persecutors, with whom he was convinced, the ward worker who had insulted him was in alliance. He could not thereafter be induced to work, and for a long time was a very troublesome patient. He was tectocephalic, had a flattened occiput and a protuberant right frontal boss.

CASE V. In the same institution a Norwegian came under observation whose father and grandfather had been prophets of the Lord, as was shown by the fact that on either side of the body they had six toes and six fingers, and the two sides of the body were unequal, the six-fingered one being smaller than the other. This father and grandfather were highly regarded in a secluded vale of Norway as religious teachers, and had great power in curing disease by charms. The father had ten children, of whom three were born dead and six died in infancy. The present patient is the survivor of this family. He, during boyhood, experienced various persecutions, some by unseen agencies, some on the part of the people of his village, who had, toward the end of his father's life, also persecuted his father. These persecutions seem to have been the withdrawal by the peasants of their belief in the father's ability to charm sickness out of cattle, evidently due to growing intelligence among the peasantry. was regarded by the father as the result of persecution by the devil, who was desirous of trying him as Job was tried. It was revealed to him that his son should also suffer persecution, which would also be the work of the devil. The son heard unseen persons, who pointed him out in school as the son of the sham wizard. In consequence he was avoided by all his school-mates except the members of one family, who still retained their belief in the father's supernatural powers. Into this family the son married and, pressed by his unseen persecutors, came to the United States. Here he worked at his trade (carpenter) and had no return of any persecution although he still believed he was a prophet. On admission to the insanehospital twenty years after his arrival in the United States, he was found to have such a decidedly asymmetrical body that suspicions of general hemiatrophy, as in the case reported by Henschea, were excited; but the condition was found to be evidently congenital. The hand and foot of the seemingly atrophic side had six fingers and toes. The man had been sent to the insane hospital in consequence of an altercation with a neighbor, who was clearly in the wrong; but, both being arrested, the patient's amour propre was aroused, and he declared his prophetship, which led to his trial and commitment as a lunatic. His wife, who applied for his discharge, was also a paranoiac. They had had ten children, of whom three were still living, at the age of six, eight and ten. Two of these three were six-toed and six-fingered unilaterally, and one of them, a boy, had the peculiar general asymmetry of the father. The third child was seemingly normal. As the peculiar delusions were past the period when they produce marked emotional disturbance, as the wife was past the child-bearing period, and as the man's employer became responsible for him, he was discharged.

CASE VI. A forty-three-year-old negro. T. A. was born of a neurotic family; occiput flattened; head tectocephalic. The patient was a bright boy, and worked for a doctor named Mansfield, at whose home he saw some experiments in "mesmerism;" soon after which he had what seems to have been a dream passing into a systematized delusion that he was destined to be a prophet of great medical ability. He evidently experienced some anomalous sensations, and was auditorily hallucinated in a disagreeable way. He was about, or soon after, this time an inmate of an hospital for the insane, placed there in consequence of a complaint made before a justice of the peace that the Mansfield family had bewitched him. He evidently believed that there were laws against witchcraft still on the statute books, as he from time to time pestered lawyers in the attempt to have these alleged laws enforced. Soon after an interview with a lawyer on the subject of witchcraft laws, he committed larceny, and was sent to a State prison. The larceny was committed under the influence of an hallucination, and his conviction was due to his own confession, made with the idea of securing protection from persecution by incarceration in the prison, where it appears he studied several trades, and made an endeavor to learn law, in order to punish his persecutors, who, he believed, were liable to the law. At about the time his term in the State prison was nearly expired, he became convinced from some newspapers that a large fortune had been left him, and that the continued persecution of the Mansfield family was due to the fact that in order to prevent him from securing the fortune and achieving the destiny already mentioned, they found it necessary to make him crazy. He was, in consequence of this, sent to the Elgin Hospital for the Insane. From there he was sent to Jefferson, in 1875, whence his perverse tendencies subsiding, he was discharged "cured," but soon after was sent to Joliet Penitentiary, for larceny, evidently of hallucinatory origin. While there he was hoaxed into believing that John A. Logan and General Grant had had the witchcraft laws repealed, and upon learning this his persecutional delusions and hallucinations began to increase in number and force. He cut off his thumb, and made an attempt to cut his throat, in consequence of his hallucinations, which commanded him so to do, lest a worse thing happen. On his second entrance into the Cook County Hospital for the Insane, he remained for about two months relatively quiet, being under the belief that after January 1, 1885, Gov. Oglesby would enforce by common law an action for conspiracy against his persecutors. February 1, 1885, his persecutory delusions again became active, and he struck a patient, who had the habit of talking in response to hallucinated voices, claiming that the latter was informing the Mansfield family of his whereabouts. From this time his delusions became less dominant, and he was sent out to work on parole with the calciminers, and worked well for a while, until one of these men (all of whom were ex-ward workers) ridiculed him as a "nigger crank," for having such ideas as witchcraft, which he at first took in a relatively calm manner, until it was repeated in an offensive way, when he struck one of his tormentors, and immediately refused to work, having new material for his delusions of persecution. He cited Grant's illness as an evidence that his persecution was about to stop, since the people would see that this illness of Grant was due to the latter's action in having the witchcraft laws repealed. He, at this time became relatively quiet, proclaimed his abilities and his claim to his fortune with much more freedom

than formerly, when he was rather secretive for fear of fresh persecution. It may be said that this man scouted Voodooism as having anything to do with his persecution. It was, he said, all nonsense, but the mesmerism was a different thing. He was transferred to Kankakee, whence he escaped, went to Washington, and called on President Cleveland, in order to have the mesmeric influence of the doctor aforesaid removed by enforcement of the common law against conspiracy. The reasoning of T. A. on his delusions was decidedly logical. The man at times fully recognized the insane nature of some of his imperative conceptions, but referred these to witchcraft, as he called mesmerism, and his explanation of the way these ideas were introduced into his mind closely resembled the description which Matthews' gave of his own case. T. A. said that the first evidence he had of the influence of mesmerism was that he could not think his own thoughts; then they introduced crazy ideas into his head, and he could only think these ideas. In a barbaric country T. A. would have founded a kingdom or a religion. In the United States it is by no means improbable that he might have played the part of a Guiteau, but for his arrest before reaching President Cleveland.

CASE VII. O. F. was the son of neurotic Bohemians. He was a bright boy and early attracted the attention of benevolent Americans, through whom he secured a collegiate education. During his attendance on college he worked hard to support himself, but had erotic delusions which he concealed. The institution admitted both sexes. During his residence at the college he gradually evolved the delusion that he was a descendant of the old English family of the Talbots and heir to their estates. opinion was only exceptionally expressed by him and attracted but little attention from his friends. His mental powers were markedly unequal. He had, at times, well-marked hallucinations of hearing. He kept a picture of a nun in his room, to which he attached peculiar significance as that of his "life affinity." He obtained a high position in his class. After graduation he obtained various places which he lost through his querulency. He was placed in a position of trust in the Chicago Public Library and stole several hundred volumes before he was detected. He made no particular use of these, which were chiefly meta-

^{1.} Haslam: "Illustrations of Madness," loc. cit.

physical works. He seems to have identified his "life affinity" with an actual personage, for he persecuted a young lady fellow-student with his addresses, which she rejected. Soon after his library scrape, the people in the vicinity of the Chicago University were startled by the arrest of two men engaged in digging a trench. It was discovered that O. F. had hired these men to dig the trench, which he intended for the purpose of seizing his "life affinity" by means of a trap-door. He then intended to brand her forehead with the legend "Variety is the spice of life," and then to let her go. The legend would be an eternal evidence of her capricious, cruel character. He was tried for the theft of the books, but acquitted as insane, on the testimony of Drs. S. V. Clevenger, E. W. Sawyer and myself. He was sent to an insane hospital; escaped, entered Harvard Theological School under an assumed name; was detected stealing books, and committed suicide. He was a rabid aristocrat, and insisted that the dogs of the working classes should be put down by dynamite. These conservative reactionary views aided him in no small degree in imposing himself on plutocrats.

(To be Continued.)

Idiocy and Feeble-Mindedness in Relation to Infantile Hemiplegia.

A REPORT OF TWENTY-TWO CASES AT THE PENNSYLVANIA INSTITUTION FOR FEEBLE-MINDED CHILDREN.*

By WILLIAM OSLER, M. D.,

Professor of Clinical Medicine at the University of Pennsylvania.

HEMIPLEGIA is by no means an uncommon affection in children, second only to spinal paralysis in frequency, and much more serious in its consequences. The records of the Philadelphia Infirmary for Nervous Diseases show that more than one in five cases of severe paralysis in children is of cerebral origin.

A certain number of the cases are congenital, some due to a fætal meningo-encephalitis, others to injuries received during delivery. The cases of bilateral spastic hemiplegia, of bilateral athetosis and of spastic paraplegia in children, are almost always of this nature. The majority of the cases of infantile hemiplegia occur during the first two years of life. The affection sets in suddenly with convulsions, often with fever, then coma of variable duration, and when the child awakens it is noticed to have lost power on one side. This mode of onset occurs in three-fourths of the cases. After a time the paralysis begins to improve; the face first; speech, if lost, is regained, and power returns to the leg. The use of the arm is rarely regained and in many cases it wastes. A majority of the patients have the characteristic hemiplegic gait. In time, as a rule, a spastic condition develops in the palsied members and in the arm contractures are common.

^{*}Communicated by Dr. Kerlin, Superintendent of the Institution.

Read before the Association of Superintendents of Institutions for Feeble-Minded Children.

Post-hemiplegic movements occur very frequently and a large proportion of the cases of athetosis come in this class.

Much more serious consequences follow—many of these children become epileptic and a considerable number present all grades of mental defect, from a simple feebleminded condition to the most profound idiocy.

At the Pennsylvania institution for Feeble-Minded Children are twenty-two cases of infantile hemiplegia, which may be grouped as follows:

High grade—5.
Medium grade—6.
Low grade—5.
Idio-imbecile—2.
Idiot—4.

Of these cases there are thirteen with right and nine with left hemiplegia. Fourteen of the patients have epileptic seizures.

Much doubt still exists as to the primary lesion in these cases, and we lack observations on the subject. Strümpell holds that it is an encephalitis of the gray matter of the motor region analogous to the poliomyelitis of the anterior gray horns of the cord in infantile spinal paralysis. In a certain number there is embolism and in others possibly thrombosis of the cortical veins. Whatever the initial lesion, these cases present well known anatomical features when death occurs some years subsequent to the attack. One of two conditions is then almost invariable-either sclerosis, involving the motor zone, or large areas or spaces in the cerebral substance filled with fluid and covered by the membranes. To this latter condition the term porencephalus has been given. I have collected the records of ninety autopsies in infantile hemiplegia and found that in fifteen there was recent vascular obstruction: in fortynine sclerosis of the cortex cerebri, and in twenty-six porencephalus. In the museum of the institution at Elwyn there is a remarkably fine collection of brains illustrating sclerosis of the hemispheres, certain of which come in this

division of hemiplegia, as the motor regions are involved. These have been already described by Dr. Wilmarth in papers before this Association.*

The following is a brief report of the cases:

Case I.—Jeannie S—, æt. 14. In institution five years. Right hemiplegia. Bright child until one year, when measles occurred and paralysis followed. No family history. Head well formed; intelligence good; can read and write; looks bright. No epilepsy. Face not affected. Arm very stiff; not much wasted; strong extension spasm at times and the hand clenches, when relaxing the fingers move but irregularly, not in the orderly sequence of athetosis. When under influence of emotion hand gets very stiff, but when alone she can pick up things. Leg well nourished, very rigid, drags much in walking. Knee-jerk not obtainable.

Case II.—Howard B——, æt. 16. Inmate for — years, Convulsions at the ninth month while teething. Father emotional, but mentally sound. Right hemiplegia. Imbecile—low grade; can talk, but slowly. Head narrow. forehead low. Face presents no signs of paralysis. Arm in characteristic position; forearm flexed on arm and hand on forearm. Very little movement, cannot move the fingers; considerable wasting. Leg a little short, is dragged in walking. Knee-jerk increased. Epilepsy, very frequent fits. Heart normal.

Case III.—John McB—, æt. 30. Inmate of institution for twenty years. History unknown. Had the stroke before he came in. No record of the age at which it came on. No sign of injury. Intelligence good, aspect good. Head well shaped. Can read and write; speaks well. No epilepsy. Right hemiplegia. Arm wasted, shrunken and in firm spasm. Wrist strongly flexed in forearm and fingers immovable in hand. The hand is sometimes relaxed. Arm is usually held by the side.

^{*}I have considered the subject at length in my Lectures on the Cerebral Palsies of Children (Medical News, July 14-Aug. 11, 1888).

Very difficult to flex at elbow. Muscles very firm. Right leg drags, not in extreme grade, can get about quite well. No special shortening. No wasting. Reflexes increased. Heart normal.

Case IV.—William W——, æt. 14. Inmate for several years. Spasms began at sixth month while teething. Paralysis noticed at sixth month. Right hemiplegia. Intelligence medium; looks bright. Forehead narrow and low. Face movements perfect. Arm can be lifted above head, flexed and extended; pronation and supination lost. Can extend the fingers, but can scarcely pick up objects. Much wasting of muscles, but not much spasm in paralyzed arm. Knee-jerk increased on both sides. Gait very characteristic, right leg drags and the arm is held out, and moved irregularly. Epileptic, only occasional fits. Heart normal.

Case V.—Ebenezer A——, æt. 12. Inmate — years. Maternal grandmother had paralysis. Patient is said to have fallen against a chair and to have hurt his head. Convulsions and paralysis followed. Face dull looking. Imbecile, middle grade, but can talk. Right hemiplegia; face not affected. Arm wasted, can be moved above head. Moderate wasting, very little spasm—in fact arm is relaxed; fingers relaxed. The leg is not shorter, but is a little wasted and is dragged in a characteristic way. Kneejerk increased in the right, but not in left leg. Epileptic, one fit a month on average.

Case VI.—John D——, æt. 14. Difficult instrumental labor. Trouble ascribed to paralysis, the result of whooping cough, followed by what doctor called brain fever when two years old. Is an epileptic. Left hemiplegia. Marked post hemiplegic movements in hand. Wrist flexed, hand sometimes relaxed a great deal. Elbow stiff. Kneejerk , especially on left side. Arm wasted, leg wasted. Drags left leg in walking. Can talk. Some choreic movements in left face. Looks very idiotic. Low grade imbecile.

Case VII.—Mary P——, æt. 24. Left hemiplegia followed ligature of right carotid artery (artery ulcerated from abscess following scarlet fever) in 1869. Left hemiplegia. Wrist flexed at right angle. Thumb held in palm. Fingers flexed, cannot pronate nor supinate. Cannot move wrist. Can move fingers a little. Drags left foot. Knee-jerk + on both sides. Can read and write. Never has fits. Can put hand to mouth, but not to head. Has no movements in hand. Arm wasted, also leg. Face not affected. Cannot pick up things. Looks bright and intelligent. Heart sounds normal.

Case VIII.—Samuel T——, æt. 15. Inmate for three years. No history. Right hemiplegia. Sometimes has a series of fits. Elbow stiff, arm wasted. Thumb held in palm, but loose. Knee-jerk absent. Head narrow and he looks idiotic. Walk characteristic. Hand relaxed. Can read. Heart normal. High grade imbecile.

Case IX.—George L——, æt. 19. Spasms came on after severe scald on head when nine months. Paralysis followed spasms. Right hemiplegia. One brother died of softening brain at fifteen months, said to have followed fall on head. Was an epileptic, but has had no fit for a year or eighteen months. High grade moral imbecile. Left hemiplegia (not face). Thumb held in palm and fingers extended, but can move them. Wrist flexed; muscles firm. Drags left leg a little in walking. Knee-jerk present on both sides. Heart normal.

Case X.—John D—, æt. 25. In house — years. A waif—no history. Microcephalic, twenty inches in circumference. Idio-imbecile. Right hemiplegia. Face unaffected. Arm and hand wasted, very stiff, can lift above head. Can flex and extend fingers—tendency to mobile spasms in latter movement. Terminal phalanges flexed on extended second. Gait hemiplegic and drags right leg. Leg wasted, but not stiff. Knee-jerk + +. No clonus. No epilepsy.

Case XI.—Annie B——, æt. 15. In institution seven and half years. No family history. An idiot. Says a few words. Right hemiplegia. Face not affected. Arm wasted, can lift it above head. Fingers contracted in palm, mobile spasm when attempts to extend. Cannot pick up objects. Leg wasted and is dragged. Knee-jerk + +. Had epilepsy when first came in; no attacks for several months. Heart normal.

Case XII.—Katie W——, æt. 12. In institution five years. No history. Middle grade imbecile. Left hemiplegia. Left face a little smaller than right. No paralysis. Arm wasted, stiff at elbow. Pronation and supination perfect. Can move fingers and pick up objects, but clumsily. Gait typically hemiplegic. Leg dragged—not much wasted. Knee-jerk +. Epilepsy—spasms frequent and general.

Case XIII — Annie F — , æt. 16. In institution twelve years. No history. Idiot. Inherited syphilis. Left hemiplegia. Face not affected. Arm much wasted and contracted at elbow and shoulder. Hand drops; fingers relaxed; no movement in fingers. No clonus to be obtained. No mobile spasm. Gait hemiplegic, drags leg, not much wasted. Chronic syphilitic periostitis of tibia. Frequent epileptic attacks. Heart normal.

Case XIV.—Mary K——, æt. 10. In institution for two years. History, convulsions at eighth month and continued for three or four weeks. Paralysis followed spasms. Sister died of convulsions. Instrumental labor. Middle grade imbecile. Right hemiplegia. Face not involved. Arm wasted, can lift to head; no special stiffness. No pronation or supination. Hand relaxed; no contraction of fingers; no mobile spasm. Cannot pick up objects. Gait hemiplegic. Moderate wasting of the leg. Knee-jerk +. Is epileptic—spasms infrequent. Heart normal.

CASE XV.—Maggie C—, æt. 16. In institution three and half years. History—maternal uncle epileptic. No

date as to onset. Middle grade imbecile. Left hemiplegia. Face not involved. Arm wasted, spasm at elbow. Hand relaxed, spasm at wrist; fingers not much contracted—clonus. No mobile spasm. Gait hemiplegic. Leg slightly wasted. Knee-jerk +. Epilepsy; two attacks in a month. Heart normal.

Case XVI.—Frances C——, æt. 12. In institution three years and ten months. No history. Low grade imbecile. Left hemiplegia. Arm and hand wasted. Arm can be moved above head; elbow stiff. Fingers relaxed. No mobile spasm. No pronation or supination movements. Gait very slightly hemiplegic. Leg a little wasted. Right knee on left side + +. Epilepitic spasms rare—one a year. Heart normal.

Case XVII.—Maggie M——, æt. 11. In institution two years and ten months. Well until sixteen months, when she had spasms for eight days. Paralysis came on and persisted. Idiot. Right hemiplegia. Face not affected. Right arm undeveloped; stiff at elbow. Hand relaxed—fingers not contracted. Gait hemiplegic. Drags leg, which is slightly wasted. Right knee-jerk + +. Epilepsy attacks infrequent.

CASE XVIII.—Anna T—, æt. — Idio-imbecile. Left hemiplegia; left face smoother, fuller and does not move so much; arm can be lifted to shoulder, is wasted and contracted at elbow; wrist flexed; fingers relaxed; no clonus; no mobile spasm; leg somewhat wasted; gait hemiplegic; knee-jerk r. + +; hand and palm turned back; epilepsy; heart normal.

Case XIX.—Clara C——, æt. 9. In institution two years. Convulsions at sixth week, due it was said to water on the brain; spasms followed fall from cradle; nothing special in family history; low grade imbecile; slight nystagmus; eyes are rotated to the right and downwards every few minutes and the head is swung; right hemiplegia; arm wasted; hand not contracted; fingers tend and extend;

cannot lift the arm to head; drags the right leg, which is slightly wasted; knee-jerk + +; epilepsy; no heart disease.

Case XX.—Florence L—, æt. 16. In institution five years. Convulsions when few months old; paralysis followed. Father had paralysis and epilepsy. Idiot, demimicrocephalic; left hemiplegia; face not involved; arm wasted, contracted at elbow; wrist drops; fingers not controlled; no mobile spasm; left leg wasted; knee-jerk + +; gait hemiplegic; epilepsy; fits infrequent.

Case XXI.—Harry S—, æt. 10. In house for three years. Family history, negative. Noticed at fifteen months that he would scream when laid on right side; no note as to when it came on. Head fairly well formed; intelligence, middle grade imbecile; no epilepsy; has nystagmus; right hemiplegia, face normal; right arm not much wasted, not contracted; fingers extended, cannot flex them strongly; arm stiff at elbow, can lift arm above head; gait hemiplegic, drags the right leg, wh. is not shorter; a little wasted; knee-jerk + +; heart sounds normal.

Case XXII.—John Q——, æt. 16. Inmate for two years and one month. Family history negative. Ordinary labor. No note as to onset. Left hemiplegia; hydrocephalic, head measures twenty-six inches; face dull-looking; low grade imbecile; says a few words; Divergent strabismus; face not paralyzed; left arm and hand smaller than right, is somewhat livid, can lift above head; no pronation and supination; stiff at elbow, no contraction of hand, can flex and extend fingers slowly, cannot pick up objects; well-marked clonus on extending the wrist; gait slightly hemiplegic, drags left leg a little: leg wasted; knee-jerk + +; ankle clonus; marked spasm on stretching the hand; epilepsy, one attack in six or seven weeks.

Persistent Spasm of the Levator Anguli Scapulæ Muscle.*

BEING THE INITIAL OF A SERIES OF NEUROLOGICAL PHOTO-GRAPHS.

By C. H. Hughes, M. D., St. Louis.

MONOSPASM, or spasm of a limited number of muscular fibers or groups of muscles, like monalgia or pain restricted to single trunk, branch or center of a sensory nerve is equally significant and valuable to the neurologist, for diagnostic purposes, with diffuse pain or generally distributed convulsive movement. It is significant and interesting by contrast and for comparison and physiological study as well as for clinical diagnostic purposes.

In our study of neurological phenomena, we are quite familar with *mono* as well as with multiple or general spasm, with monomania as well as with general insanity, with localized, as well as with general neuralgia. In fact, manifestation of these in localities and in part is more common than in general.

But certain forms of chronic monospasm are as infrequent as are that limited and restricted psychical painful disease which we might designate as monomelancholia, a phase of psychiatric disorder which has sometimes fallen under our own personal observation and been described in other terms by good psychiatric authority, but which may be called a comparatively rare form of mental disease.

The spasmodic tabetic crises (laryngeal, æsophageal, cardiac, gastric, etc.), possess a painful and peculiar interest to the neurologist, which we place in juxtaposition

^{*} Read before the American Neurological Society, Sept. 19th, 1888.

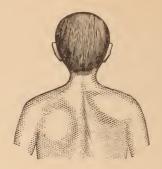
for interesting differential study, with the more evanescent and not so discouragingly significant phenomena of hysteria and the grave states of atrophic and spastic paralysis.

No part of the muscular system innervated by the cerebro-spino-neural mechanism is free from the possibility of spasms; from the muscles of the eye to those of the scrotum or testicle, though we are clinically and by physiological experiment much more familiar with spasm in some parts of the organism than in others.

The spasmodic phenomena of tetanus, of tabes, of hystero-epilepsy, of tetany (or tetanilla, as Ross prefers to call it, and which is more exactly expressive), of catalepsy, of Thomssen's disease, of the eclampsias (toxic, auti-toxic, thermic or febrile, idiopathic febrile, asphyxiate, reflex, etc.), and the monospasms and unilateral convulsions of cerebral cortex, irritation, etc., remind us how omnipresent and universal, for cause, spasm may be in the organism.

Trismus, torti-collis, main en griffe, angina pectoris, Bell's palsy, occulo-motor monospasm and the graphospasms, are the professional hyperkinésies that have become classical through oft recognition and exact description in the literature, but there is a region of the neck and shoulder which I have seen under the influence of prolonged spasm in an extremely young subject-a child of two years-which I have never seen before or heard described by any confrere in the study of neuriatry or psychiatry, nor is it generally described in the books on neurology. Ross, however, has mentioned it as a spasm of the levator anguli scapulæ, "the upper and inner angle of the scapula being strongly elevated, the head slightly inclined to the same side, the shoulder drawn forward, the supraclavicular form increased in depth, the contracted muscle projecting distinctly beneath the anterior border of the trapezius," giving the appearance in a young child, of congenital deficiency, as well as deformity by displacement of the scapula. The displaced scapula appears at first sight much smaller than its complement of the opposite side, though by actual measurement there appears no difference.

The child from which the accompanying drawing is made is two years old. The deformity appeared about six months ago, after a spell of fever, probably convulso-spinal fever, from the mother's description. The father's history could not be accurately learned, but he is an apparently healthy laboring man; drinks, but not an ine-briate. The mother brought the child to Dr. Harry



Hodgen, from whose hands the case was passed to me. Dr. Hodgen's acknowledged skill in orthopedic diagnosis not enabling him to detect any joint lesion, or any tendinous trouble remediable by operation.

The cause of this spasm is, in my judgment, cervical spino-meningeal irritation at the origins of the brachial plexus, from which innervation of the levator anguli scapulæ and contiguous muscles of the shoulder-blade is derived.

This meningeal irritation is probably the legitimate sequence of a previous spinal meningitis.

[Note.—The drawing accompanying this paper illustrates the appearance of affected shoulder-blade. The drawing is made a little larger than natural for illustration.]

Hypnotism and Suggestion, and their Therapeutic Value.*

By Dr. B. H. STEPHAN.

GENTLEMEN: Hypnotism, and the stir in these days created by it, in both medical and non-professional circles, furnish fresh proof of the correctness of Solomon's saying that there is nothing new under the sun.

Intimations of hypnotic phenomena come to us from remotest antiquity. Herodotus, e. g., tells us of priests who, in their temples, caused artificial sleep in their patients; and the oracles of the Pythia, at Delphi, remind us irresistibly of the utterances of the modern somnambulistic hypnotized subject. The Brahmins and Buddhists relieved pain by a look, and Egyptian sorcerers, by having their subjects stare at cabalistic symbols drawn in a shining basin, provoked hypnotism. Medieval history is full of miraculous cures wrought by a touch of the diseased parts. In short, there is abundant evidence to show that hypnotism is not an invention of these latter days.

But as hypnotism itself is not new, so is neither the controversy in regard to its reality and therapeutic value. Indiscriminate praise and adulation on the one hand, and boundless contempt and scorn on the other, have repeatedly succeeded each other in times past, and at present, also, we are witnesses of a renewal of this dispute—a controversy so much the topic of the day, that it may not be devoid of interest to discuss, on this occasion, the problems connected with it, and to point out such

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facts as to enable us to assume a definite position in relation to it.

First of all let us glance at the history of hypnotism. We can begin with the advent of Mesmer, for the animal magnetism of earlier times has left but slight traces, if any, of its influence on the views of the present day.

Anton Mesmer, born in 1734, graduated in Vienna in 1766, as Doctor of Medicine, and defended a thesis, in which he analyzed the influence of stars and plants on the cure of diseases. He claimed that he could prove the sun, moon and stars to exert a mysterious influence upon all living things, by means of a subtle fluid, which he termed animal magnetism, to point out its resemblance to the property of common steel magnets. In 1774 he made the acquaintance of the Jesuit Hell, who cured diseases by the use of steel magnets, and discovering a certain analogy between his own astronomical theories and the experiments of this Professor of Astronomy, he joined the latter, and thenceforth they employed themselves regularly in treating various pathological conditions by means of their magnets. At first they had no lack of patients, and the papers were liberal in their praise of the new treatment; but when the reception of this therapy on the part of the learned men of Vienna was anything but favorable, public interest soon diminished; and as Mesmer had meantime made the discovery, as he thought, that also without any magnet, by simple rubbing with the hands similar results could be obtained, he left Hell in 1778, and, this time alone, began to practice his methods of treatment in Paris. Here success was even greater. First of all an assistant magnetizer became necessary; but the number of the sick gradually became so enormous that he was compelled to devise means whereby he might be enabled to bring the healing power of magnetism to bear upon several persons at a time. These means Mesmer found in the famous "baquet." In the center of a large hall into which, through red curtains, a mellowed light was thrown, was placed a beautifully carved chest, filled with pulverized glass and iron filings. In these lay glass bottles carefully arranged, which, it was supposed, Mesmer had magnetized, and which were connected with numerous wires, the free ends of which were intended to be held by the patients. Around the baquet, arranged in rows, were the patients. A breathless silence prevailed until, out of a neighboring apartment, stole softly as a zephyr, the sweet tones of a piano or of a human voice. In expectation of the things about to happen, and under the more or less diabolical influence of the surroundings, the moment now gradually approached in which the mysterious powers in the baquet must manifest themselves. One woman after another had a hysterical attack, and as soon as a sufficient number around the baquet showed similar symptoms the magnetizer entered clothed in rich-colored silk, and with an iron wand he touched the diseased parts; and, in many cases, indeed, a healing influence seems thus to have been exerted. Also in France, however, there slowly began to show itself distrust in these methods, and in 1784 the government appointed a committee to inquire into the facts of what was called "animal magnetism." This committee, which published its report August 11, 1784, through Bailly, advised very unfavorably, and thus became the cause of Mesmer leaving Paris and returning to his native Germany.

In the same year that Mesmer disappeared from France the Marquis De Puységur discovered that some persons can be brought into a condition of exalted imagination, and a high degree of "clear-sightedness." He deemed it possible by means of persons in the conditions of somnambulism and clairvoyance to cause all manner of questions to be answered and to penetrate the secrets of nature and of the future.

The unfavorable report on the methods of Mesmer became also the "coup de grace" for Puységur's discovery; and after a period of unreasonable laudation, mesmerism and somnambulism became almost forgotten. Here and there a few remained, it is true, who continued to devote

their attention to the scientific side of the question, and several others who were interested in it from a financial point of view, but the general public no longer cared for it.

James Braid, a Manchester surgeon, was the man who, in 1840, a second time brought the matter before the forum of science. He placed the question on a sound basis—scientific observation and experimental investigation—and must be regarded as the actual founder of our present knowledge in regard to it. To him, also, we owe the term "Hypnotism."

Braid was the first one to show-and this discovery was of especial importance, as it completely divested the subject of its mystic halo-that the hypnotic sleep may be induced by the fixation of any subject. A series of other discoveries was, however, scarcely less important. described, e. g., how by closing the fist of a hypnotized person his face will assume the expression of anger. Thus he also had a knowledge of Suggestion and its therapeutic power. Notwithstanding so many interesting results, Braid never succeeded in gaining the appreciation of his contemporaries and in arousing in them a general interest in his work. Prior to this, Father Athanasius Kircher, in his book entitled "Ars Magna Lucis et Umbra," had said that a chicken could be made to lie perfectly still on a table by holding down his head while a chalk line was being drawn in front of its eyes. This fact, related by him in 1641, had to be recommunicated to the learned world, together with other similar phenomena, and to be protected by Czermak's therapeutic authority; and Hansen, the Danish magnetizer, in 1880, had to stir up the heads and hearts of the opponents and partisans of hypnotism, before the physiologists, especially in Germany, and the clinicians, in France, would enter on an experimental investigation of the subject.

We may say that the correctness of Braid's observations on most points is now clear. Few doubt to-day the reality of hypnotism. Hypnotic sleep may be produced by all stimuli capable of causing fatigue. This fatigue

may be the result of the stimulation of sight, hearing, taste, smell or touch. Inasmuch as normal consciousness depends upon the intact condition of the gray substance of the cerebrum, and since consciousness is nearly or entirely suspended in hypnosis, we are warranted in believing that the function of the gray matter is thereby disturbed. Whether the disturbance is created reflexly by continued irritation of the nerves of hearing, taste, smell or touch, and is, therefore, inhibitory in its nature or whether stimulation of these nerves causes a reflex vasomotor contraction (in the lethargic stage), or dilatation (in the cataleptic and somnambulic stages), which vascular changes, in turn, bring about the disturbances of consciousness,—are questions still sub judice; but certain it is that hypnotism puts a check, mostly of a passing nature, on the workings of consciousness. A question nowadays much and variously discussed, and which is hotly debated, especially in France, is this: Can every individual be hypnotized, or must there be present a definite pathological condition without which the hypnosis is impossible? other words, must neuropathic and hysterical persons be considered as peculiarly susceptible to it, or are neuropathic antecedents matters of indifference, as regards the production of the hypnotic state? If it be that fatigue causes the hypnosis, then the manner in which this fatigue must be brought about in a particular individual may have to be determined separately in each case; but, then, also there cannot be any reason, a priori, why all persons may not be hypnotized; on the contrary, it is certain that neuropathic and hysterical persons seem to be peculiarly susceptible, and that their hypnotic sleep differs from physiological sleep in certain special objective signs. And here really lies the kernel of the question, for when a person is thus artificially put to sleep, what is there to prove that this induced sleep is other than physiological? To establish a difference the susceptibility of the hypnotized subject to suggestion has sometimes been appealed to; but I do not believe that this susceptibility to

suggestion can be adduced as proving the existence of a sleep which is not physiological. Indeed, Maury relates in his "Sommeil et Rèves," how he requested someone to try to arouse in him when asleep certain sensations; next, to allow him time for a dream, and then to awake him. It then appeared that these artificially produced dreams always bore some relation to the sensations which he had been made to experience. It is, moreover, a known fact, that it is sometimes possible to carry on quite a conversation with persons who are in the habit of talking in their sleep without their remembering anything of it on awaking; and one may often succeed in making a sleeping child turn over on its side by softly whispering into its ear to do so. Also in normal sleep, therefore, the mind is quite susceptible to suggestion, and the latter cannot be regarded as a sufficient criterion for the existence of a sleep other than physiological. According to Charcot and his school there are, however, other criteria; they distinguish two forms of hypnosis: "la grande hypnose" and "la petite hypnose." In the former variety, which can be provoked most easily and with most certainty in hystero-epileptics, three stages can be recognized.

- I. The cataleptic stage. This stage can be brought about by means of any loud, sudden sound, of a sharp light, and in some individuals by letting them look attentively at any object. One in a cataleptic condition stands as if rooted to the spot, with open eyes and a staring look; the limbs can be placed in the most difficult positions, and in which they will remain an almost indefinite time; there is complete analgesia, but no neuromuscular hyperexcitability can be detected. There is susceptibility to certain forms of suggestion.
- 2. The lethargic stage. This can be produced eitherby the fixation on the part of the subject of any object, or by opening the eyes of one in catalepsy. In this condition, also, there is complete analgesia, the limbs are relaxed, and, if lifted up, fall by their weight; the tendon reflex is exaggerated. The most important characteristic

of this condition is the hyper-excitability of nerves and muscles; e. g., pressure on the seventh nerve causes spasm on the corresponding side of the face; touching the ulnar nerve makes the hand assume the claw form; when the brachial nerve is compressed the arm is bent. In this stage there is, as a rule, no suggestibility.

3. The somnambulic stage. In some individuals this can be produced by fixation of any object, in others by letting them listen to the ticking of a watch, in still others by so-called "passes;" but every one in the cataleptic or lethargic condition can be transferred into this stage by rubbing the crown of his head. The eyes are then partly or entirely closed; there is no hyper-excitability of muscles and nerves; there is cutaneous anæsthesia, but an exceeding suggestibility is the chief characteristic.

The existence of different forms of "petite hypnose" is by no means denied by the Paris school; on the contrary, Richet himself has described several of them; but they contrast "la petite hypnose" more or less sharply with "la grande hypnose," since the forms of the former kind have not been sufficiently distinguished, thus far, by objective physical signs. The Parisians, therefore, claim to provoke hypnosis without the use of suggestion, have experimented in every way to learn the influence of suggestion on other hypnotized subjects, and have published important results. For them, accordingly, hypnotism and suggestion are two entirely different things. The school of Nancy, with Bernheim, Liébault and Liégois at its head, differs from this in its teachings chiefly on two points:

- I. They maintain that there is no special relation between hysteria, neurasthenia and hypnotism, respectively.
- 2. For the causation of hypnotic phenomena and therapeutic application they attach much more importance to suggestion.

As regards the first point, it does seem, indeed, that in a great number of hystero-epileptics the several Charcotic

stages can be induced easily, certainly and without suggestion; but, on the other hand, it is also certain that there are hystero-epileptics in whom these stages cannot be provoked, and that some persons can be placed in a primary cataleptic state in whom there is not a trace of hystero-epilepsy. By no means should it be forgotten that the material of the Salpêtrière is a special and a peculiar one, and the unmistakable one-sidedness of the Parisian views may be attributed to this circumstance. There is, however, still another point of great importance which makes the Parisians one-sided in their opinions. They look upon hypnotic sleep as being totally different from the physiological one; and they have some right to this view, inasmuch as hystero-epileptics (their chief material), in the so-called Charcotic stages show specific physical signs of hypnosis. This manner of viewing the subject is intimately bound up with a question of enormous social importance, viz., the moral responsibility for crimes committed or suffered in hypnosis. Despine relates in his book, "Etude Scientific sur le Somnambulisme," how a beggar named Castellan hypnotized a young girl who had a positive aversion to him, and in that condition told her to follow him; how she actually left her parental home, and was ever afterwards used by him for all kinds of immoral purposes. And if, as has, indeed, not yet happened, but may occur at any time, some one after committing a murder, should declare to have perpetrated the crime under the influence of a suggestion, is such a one legally responsible; and, taking for granted that the removal of such a person out of society is desirable, should he be sent toprison or to an asylum? The Paris school, which sees and fears the approach of these dangers to society, and which makes, as yet,—perhaps on this account,—a very sparing therapeutic use of hypnotism and suggestion, seems unable, from the position it takes, to meet these difficulties in a way entirely satisfactory. They argue thus: Everyone who is summoned to appear before a judge after committing a criminal action, and then appeals to hypnotism and suggestion in order to free himself, must submit to a medico-legal examination, in which it must be determined, first of all, whether or not this person is susceptible to hypnotism. Now, then, by reason of what facts have we the right to assume this susceptibility? According to the school of Paris we have a right to this assumption if the medico-legal expert succeeds in putting the patient to sleep, and is then able to recognize in the sleeper the physical signs which are characteristic of the so-called grande hypnose. But the question arises: What if these signs remain absent? What if the subject goes into so-called petite hypnose, a condition in which, as has been positively determined, the suggestibility is exceedingly great? The Parisians opine that persons in this condition show very few constant physical signs; signs, moreover, which have never yet been subjected to an accurate experimental investigation. They deem it highly important that these conditions be more accurately described; for, besides physical signs, they do not recognize any conditions of this kind, which may be entirely simulated, as objective criteria; and till the error of these views shall have been clearly demonstrated they will hold to the view that no one has a right to appeal to hypnotism in order to clear himself from guilt, if he does not show the requisite objective physical signs. On reflecting a little it cannot escape our notice that by this appeal to the incompleteness of our knowledge regarding the objective criteria of the conditions of petite hypnose, the problem is not satisfactorily solved. On the contrary, in view of the results obtained by the Nancy school, which has been able to cause a more or less profound sleep in ninety-two per cent. of their cases, whether neuropathic or not, I believe that there is a great chance of its being shown in time that from common physiological sleep to the condition of granae hypnose of Charcot, there is a series of scarcely noticeable changes, and which cannot be precisely and accurately differentiated; so that, according to my opinion, they may at any time be confronted

with medico-legal difficulties which to them would be insurmountable.

As regards the second point, that hypnosis may be induced by means of suggestion alone, has long been known. This was the method employed in 1815 by the Portuguese Abbé Faria, in his "Séances de Magnétisme," at Paris. He told the subject to take a seat in an armchair, to close his eyes, and to direct his entire attention to sleep. After waiting a short time he suddenly and unexpectedly spoke the command, "Sleep!" and in this way he succeeded in hypnotizing several persons. The same methods, slightly modified, are employed by the Nancy school. As soon as hypnosis has been provoked, therapeutic suggestion begins, and consists simply in assuring the subject that the abnormal sensations are diminishing and have disappeared, to which is generally added that the improvement or cure will persist after awaking. Although it has been repeatedly stated that the Paris school does not attach so much importance to suggestion in the treatment of nervous affections as does the school of Nancy, in my opinion this is incorrect. The former has expressly pointed out, indeed, that hypnotism, as such, exerts no curative power; but in the treatment of paralysis, neurasthenia and psychical disturbances, this school has so often made use of suggestion, and has described so minutely and accurately the method of its application and its thereapeutic effect in these cases, that it is difficult to maintain that they attach to it too little value

But it seems to me that those of Paris are more prudent than the *savants* of Nancy. The former, indeed, are still experimenting, and endeavoring to establish positive, accurately defined indications for its application, but as yet are cautious in the medical use to which they put it, not because they attach no value to it, but because, as it appears to me, they are more thoroughly convinced of the correctness of Hippocrates' dictum: $\pi\rho\omega\tau\sigma\nu$ $\varepsilon \xi\tau\iota$ $\tau\sigma$ $\mu\eta$ $\beta\lambda\alpha\pi\tau\varepsilon\iota$ ν .

The question which to-day especially interests the profession and the laity is the therapeutic value of hypnotism and suggestion.

In the November number of *De Tijdspiegel*, Dr. Cattie, of Arnhem, announced some publications on spiritism, and hypnotism, and ended his announcement of a brochure on the latter subject with these words: "We freely recommend this interesting brochure to all, who, not quite devoid of all common sense, still believe that hypnotism may be of use to medical science, or may assist in finding out the causes of certain forms of disease." When, on the contrary, we consider what Dr. Van Renterghem related a short time ago with enthusiastic conviction to the Natuur-en Geneesk. Congres concerning his results with hypnotism and suggestion, we cannot but be incited by the contradictory opinions to investigation and criticism.

Let us proceed from known facts. I regard it as a settled fact that many patients feel better after their physician's visit than before. He points out to them certain improvements since his last visit; he detects for them certain favorable symptoms; the disease itself he declares is curable; he asks for patience, and holds out the hope of complete recovery. Thus he leaves the sufferer, and the latter feels relieved and in far better spirits than he was before the arrival of his Æsculapius. Does not the physician in such a case employ suggestion? But there are better examples. I recollect the case of a hysterical woman, who had been dosed in vain with all manner of nervines, and who finally sought the advice of a medical professor. The latter examined her most carefully, and then said: "I will prescribe a powder, of which you are to take a tablespoonful three times a day. As soon as your bowels get black you may be certain that I have recognized your trouble and am treating it right; when you see this happen you will be well before the powders are used up." The powder contained some iron, but the neuropathic symptoms disappeared within a few days. Not many years ago such an advice would have sounded

strange, coming, as it did, from a teacher of medicine; but in the light of modern hypnotism shall we not give all praise to the Professor, and say that he cured by suggestion? In No. 19 of the Tijdschr. v. Geneeskunde, 1887, Dr. Küthe reported a case of singultus, which he cured by a decoction of jaborandi. In the next number of the same journal, Dr. Arntzenius says that he has succeeded repeatedly in causing the same trouble to disappear by tying a pair of towels in a peculiar way around the patient's body. I myself was very lucky one time, in a similar case, through the effects of a very active remedy, viz., mica panis, in pills. The trouble, which had lasted some months, vanished in three days. The remedy of Romberg, aqua destillata with an exclamation point, and administered guttatim against hysterical symptoms, is classical. Who of you has never cured hysterical aphonia by laryngoscopy? And how many have administered hypodermic suggestion by subcutaneous injection of clear water? Is not the occasional success of the Homeopath frequently the result of a kind of auto-suggestion by the patient? Indeed, I for one find it difficult to understand how there still can be persons like Dr. Cattie, who dare deny that suggestion has any therapeutic value whatsoever, and since suggestibility in the hypnotic condition is often exceedingly great, I believe it is beyond all reasonable doubt that neuralgias, paralyses, etc.; in short, that functional disturbances may often be readily cured by these means; and we have the statistics of trustworthy observers to corroborate this opinion. A different question is, whether organic diseases can be benefited by it in any way. At the Natuur-en Geneesk: Congres mention was made of cases of gout, rheumatic affections, and of chronic ulcer of the leg, cured in this manner. Such results are usually obtained by combining suggestion and friction of the diseased parts. Tamburini and Seppili have shown plethysmographically, that if one of the hypnotic phenomena in the lethargic stage is a vascular dilatation, in the stage of catalepsy there is a

constriction of the peripheral capillaries. Beaunis succeeded by means of suggestion to reduce the pulse from seventy to twenty-five, a Marey sphygmograph being used in the experiment. By applying postage stamps to the shoulder and suggesting sinapism, Focachon was able to so modify the capillary circulation of the parts as to cause blisters.* And there is, therefore, some ground for the belief that through a modified capillary circulation, brought about by hypnotism and suggestion, even organic affections may be influenced and cured. But, in my opinion, the chasm which here divides well substantiated facts from therapeutic hypothesis is still too great, and not sufficiently bridged over by science, to be able to recommend this method in even exceptional cases.

Against the treatment by hypnotism and suggestion several objections have been raised.

In the first place, it has been pointed out that it may not be devoid of danger. To hypnotism as such, let me point it out once more, no therapeutic value attaches. It is true, that in the Salpêtrière it was observed a few times that mere hypnosis sometimes diminished the number and severity of hystero-epileptic fits; but, on the other hand, remains the fact that after a hypnotic sleep, just as well as after the administration of chloroform or morphine, neuropathic symptoms may arise which had never been recognized before the narcosis. Many of the hysterical patients who gathered around Mesmer's baquet were then convulsed for the first time; and the recorded cases of patients who became only more nervous after hypnosis are too numerous, and published by too competent observers, to doubt of their correctness. Now, it has been maintained that it is possible to remove or to prevent these effects by suggestion itself; but in view of many well-supported facts I look upon this as a sophistic invention

[•] Dumontpallier and Mabille, as well as Focachon, have succeeded in this; and even Beaunis believes ("Le Somnambulisme provoqué, études physiologiques, H. Beaunis, Paris, 1885"), that he has succeeded in thus producing local hyperæmia and increased temperature, with subsequent swelling and vesication.—Translator.

rather than as a scientific truth. Hence, also, that the Paris school will, for the present, make use of hypnotism and suggestion in cases of hystero-epilepsy only; that is, in such cases in which, at the worst, it cannot produce pathological symptoms which have not existed before. It might be asked how it can even be thought of in earnest, to introduce a therapeutic agent with which so many dangers are connected. This, however, is an objection relevant as well to all of our most valued nervines. The dangers connected with the use and abuse of morphine, chloral, alcohol, cocaine and bromides are no less, indeed, than those of hypnotism, and yet these dangers will surely prevent no one from using them from time to time. But these latter dangers are well known, while our knowledge of the disasters which may follow the use of hypnotism is still extremely meagre—an excellent reason to be doubly cautious.

A second objection has been raised against its use, namely, that although suggestion may, indeed, cause a neurotic symptom to disappear, this will either return or a new one take its place (Binswanger). I will not deny the truth of this assertion, but neither can I see in it any reason to reject this therapeutic measure unconditionally. Whoever thinks that hypnotism and suggestion constitute a complete panacea against all functional troubles will surely be convinced, sooner or later, that he is mistaken; but the passing nature of the cure by suggestion is something which this method has in common with many others.

How many women think all the world of a pessary, because the physician has found the origin of their hysterical complaints in a doubtful flexion or version of the uterus? How many women are daily abused, with the best possible intentions, by oöphorectomy, curetting and cauterizing the mucous membrane of the uterine cavity, in order to rid them of hysterical symptoms? I willingly admit that our journals tell remarkable things about the results of such treatment—but in how many of these

cases has the operation been the real therapeutic factor, and in how many others must the improvement, when this did follow, be attributed to psychic influence? And does not general practice teach convincingly (in which patients remain under observation) that in the majority of these cases their immediate effect is only temporary, so that, sooner or later, there is either a return of the same trouble or a development of other hysterical symptoms; and that, at least, in hysteria, "aus einem Punkte zu curiren," seldom fails to hit the mark.

A third objection is, that it is incorrect to speak of the use of hypnotism and suggestion as being medical treatment. Medical treatment presupposes medical knowledge; but who is willing to qualify as such something which, after all, everybody, possessed of a little self-confidence, can do, and which actually is accomplished by numerous dead-beats and conscienceless quacks. Gentlemen, because feeble-minded old women still lend successful aid by their presence over a cup of coffee flavored with the gossip of the lying-in-room at the ushering in of a new citizen of the world, shall we consider it beneath our doctorial dignity to conduct a case of normal labor? Shall we, because countless people without the possession of medical knowledge massage with good effect-shall we declare that massage does not belong to our business? Shall we extract no more teeth because the magic tooth-puller, with his cart of patent medicines, still flourishes? Shall we * * * forsooth, we may be educated as scientifically as we please; we may raise the scientific standard of medicine as high as we can, in the practice of our profession, in the cure of the sick, we are, and remain always, artists; and I think that as such we shall do well, in the choice of our means, to keep in mind: "Je prends mon bien où je le trouve;" and if hypnotism and suggestion possess any real value, I should very much regret if, for such reasons, no use were made of them.

Even though it must be conceded that objections may

be raised against treatment by these means, part of the objections do not hold at all, and the rest cannot be said to be more serious than those which are directed against the use of many other nervines.

There is, however, one thing which should not be lost sight of in considering the therapeutic value of hypnotism and suggestion. It is quite generally accepted that hysteria and neurasthenia are much closer related to psychoses than to organic nervous diseases. That these psychoses in some instances arise reflexly is beyond all reasonable doubt; but in many instances they are brought about more or less directly, and are presumably dependent upon a functional disturbance of the cerebral gray matter. It is against the latter form of psychoses that it is proposed to make use of hypnotism and suggestion; but even in these cases, this method, though often removing symptoms, may not act curatively on the original disease. It is almost certain that neuropathics, laboring under the fixed idea that they are subject to this or that form of disease, often succeed in developing the symptoms properly belonging to it. Neurasthenia is either inherited (this is by no means rare in these days of fast living), or has resulted from the influence of social embarrassments. business reverses, loss of property, pressing cares, disappointed hopes, unsatisfied ambition, family troubles. grief, etc.; and in such a soil, under the suggestive influence of a fixed idea, a functional disorder of some kind has taken root and developed itself; but though suggestion has really played an important rôle in originating this trouble, an exclusively psychic treatment, by means of hypnotism and suggestion, will generally have little or no effect, inasmuch as the pathogenic idea has been developed in a soil which remains uncultivated, and in the midst of surroundings and circumstances which do not change; and thus it is that isolation of the patient becomes a primary necessity in order to give to therapeutic suggestion a chance of permanent success. Isolationthe removal of the patient from the environments in which

his trouble began, and the many causes which daily do him harm-is our principal resource in the treatment of hysterical neurasthenics; while dieting, psychical and physical rest; hydrotherapy, electricity, massage, and, perhaps also, hypnotism and suggestion may aid a judicious treatment. It is remarkable what surprising results Weir-Mitchell, Playfair and Burkart obtain with their treatment of hysteria and neurasthenia by combining several of these therapeutic measures. From what we have just considered, it follows, however, that hypnotism and suggestion are much better adapted for asylum treatment than for private practice. We may be able in private practice to cause hysterical and neurasthenic symptoms to disappear; seldom, however, do we succeed in curing hysteria and neurasthenia, and yet these affections pass in general practice, nor entirely without reason, for cruces medicorum. To what extent, under asylum treatment, hysteria and neurasthenia are cured permanently has not yet been positively determined; but in a suitable institution, rational means can be combined to effect this purpose.

Gentlemen, I have finished. You will have observed that it was not my intention to furnish a purely scientific review of the present knowledge concerning hypnotism. Moreover, I do not regard this as being yet possible; for the science which is now being studied experimentally on man himself, is still completely in its period of evolution. What has been found is so extraordinary, the facts contradict each other on so many points, and so frequently, that a comprehensive view cannot yet be given, even if one were intimately acquainted with all the modern literature on the subject. What I have done is to call your attention a few moments to some of the practical problems connected with it. The way in which hypnotism is being popularized by newspaper articles and other means (and which I regard as a dangerous proceeding in such a matter), makes it more desirable than ever that at least medical men may have a clear understanding of what is to be hoped for and to be feared from hypnotism and suggestion. If I should try to give a resumé of my opinions, as expressed in what has gone before, it would read somewhat like this:

- I. The experimental study of hypnotism deserves undivided medical interest and attention.
- 2. It is not improbable that in the suggestibility of hypnosis an important therapeutic agent will be found to have been discovered.
- 3. As there are dangers connected with hypnotism, and as no positive indications for its application have as yet been given, prudence bids us be very cautious in its use.
- 4. At present there cannot yet be any question as to the applicability of this method to any but dynamic disturbances; but, though the probability is not great, the possibility that even organic affections may not be entirely beyond its reach must by all means be kept in view. Facts, however, are still wanting which may be considered as having positively demonstrated its efficacy in such cases.

The Question of Responsibility in Inebriety.

By T. D. CROTHERS, M. D., Hartford, Conn.,

Superintendent Walnut Lodge.

THE appearance of an inebriate in court, charged with crime, brings out a strange conflict of theory and opinion. The court, lawyers and experts differ, and the confused jury decide at random. The following outline histories are of cases which have been tried during the past year. They are given to illustrate the confusion of medical testimony, and the necessity of a clearer knowledge of these cases:

John Smith shot his brother while intoxicated. Smith was a quiet industrious farmer when sober; never irritable or unreasonable except when drinking. He began to drink at intervals dating from a sunstroke. These drink paroxysms were from ten days to two weeks' duration. Twice he had suffered from convulsions following these paroxysms. After drinking for four days he went to his brother, with whom he was on the most friendly terms, and demanded a note which was held against him. This being refused he shot him. On the trial two expert physicians swore that he was sane, three other medical men were doubtful, and one was sure of his insanity. The man was hung.

John Brown killed a bar-keeper, a stranger to him. Brown was a grocery-man, who had for the past three years drank cider brandy to excess at short intervals. He had greatly changed in disposition and character in the past year, was quarrelsome and very unreasonable in conduct and language. The bar-keeper did not give him back the change he expected, and at once he fatally assaulted him. On the trial a superintendent of an insane asylum, swore that Brown was fully sane and responsible. Other medical

testimony varied, and the prisoner was convicted and sentenced to prison for life.

John Jones was a neurotic from an insane family. He was a chronic inebriate, and had drank for twenty years to excess. In some unknown way he killed a woman while intoxicated, and ever after denied all recollection of the crime. The same expert testimony divided on the sanity and insanity of the prisoner, and he was finally executed as sane and responsible.

John Doe was a temperate, exemplary man up to fifty years of age, when, after a severe attack of typhoid fever he drank to excess. He became an inebriate and politician, and finally shot a man in a political quarrel, who differed with him. The expert witnesses swore to his sanity and insanity very positively, and he was found guilty. The

·case is now pending in the higher courts.

Richard Roe was an inebriate from early life with bad heredity. He had been a hack driver, a bar-keeper, and lived an irregular, strange life. He killed his wife in a drink paroxysm. On the trial two experts thought he was of sound mind and simulated insanity. Other experts believed he was unsound and demented. He was sentenced and will be executed. These cases might be multiplied almost indefinitely, and are common in every criminal court of the land. The inebriety of the prisoner, and the intoxication at the time of committing the crime, suggest the question of sanity and responsibility. The courts may ignore this question, but medical men cannot. Neither can the medical man sustain the theory of vice and increased responsibility in these cases without reflecting on his scientific intelligence. Of course experts will differ as to facts, and their meaning in certain cases, but when the issue turns on the general question of the sanity and responsibility of a man who has been poisoned for years with alcohol, there should be an agreement on certain general principles. It is the failure to recognize these principles that brings out such confusion of opinion in courts, and reflections on the honesty of experts.

My object is to point out some of the general principles and landmarks which should guide the physician in his study of these cases.

The object of such inquiry is to determine the mental health of the prisoner at the time the crime was committed, and to ascertain whether he could realize the nature and consequences of his acts, and had the power of selfcontrol.

Beginning with the fact that the prisoner was an inebriate, and the crime was committed while using spirits, the first study should be into the form of inebriety from which the prisoner suffered.

If a *periodical inebriate*, the character of drink paroxysm, and its duration, and the free interval should be studied, to show how far the brain was dominated by morbid impulses.

If the drink craze was sudden, impetuous, and overwhelming, at its onset, associated with delirium and often delusions, it is called dipsomania, a distinct form of insanity and irresponsibility. The victim is controlled by a maniacal impulse, and is without clear conception or control of his acts. He has a form of epilepsy and circular insanity that cannot be mistaken.

If the periodicity is not marked by pronounced mania, its exact return at certain stated intervals is evidence of neuroses and central nerve disease, which grows with each repetition, destroying consciousness and power of control at the time. Crime, or any act committed during those periodical attacks, cannot be the result of conscious reasoning or realization of the character or results of the act.

If the act was done in the paroxysmal stage of periodical inebriety or dipsomania, there is strong probability of insanity and irresponsibility.

The second inquiry should be of the crime, and the circumstances associated with it.

If the evidence shows that the prisoner was using spirits at or before the time the crime was committed, and, also, indicates no motive or reason for the act, which may be committed in a strange, unusual way, or in an exact methodical manner, this sustains the probability of mental unsoundness. The favoring or retarding influences of the surroundings, and circumstances of the act; the reason and non-reason apparent during the commission, after or before the act, all throw light on the state of the mind at the time.

Under this head will come the complex influences of occupation, nutrition, mental and physical exhaustion, associated with the use of spirits or dependent on it.

The third general study should be of the origin of inebriety.

Here physical injuries, such as blows on the head, sunstrokes, or profound exhaustive diseases; or physical injuries which came from brain injury, nerve shock or strain, and like causes, should be studied; also nutrient, muscular, sexual, and emotional disorders, from which inebriety is often originated or largely intensified. Where many of these causes are more or less distinct, the brain failure and impairment can be readily traced.

Not unfrequently in these cases the inebriety is merely a symptom of brain degeneration; the brain integrity and capacity to reason and act normally are permanently broken up. Sane conduct and thoughts in such persons are always automatic and along lines of accustomed thought and act. When they go beyond this, mental aberration and defects are apparent. Such persons have little or no control over their acts or reason, unless under the most favorable circumstances and conditions. Along this line the insanity of the prisoner can often be conclusively demonstrated.

The fourth line of study should consider the influences of heredity.

A drinking and insane ancestry points to a direct entailment of mental degeneration and feebleness, and always a more or less unstable organism, unable to bear the strains and drains of life. A consumptive, epileptic, hysteric, and odd, peculiar parentage, are always followed

by defective children. Inebriety and many complex neuroses date back to this cause. Defects of reason and control are transmitted as positively as external forms and peculiarities.

Where the parental degeneration dates farther back, it may be less prominent, but it is always a factor. A heredity associated with inebriety from neurotic ancestors, gives strong indications of insanity and irresponsibility.

If the facts in evidence on these four points of inquiry sustain each other, the conclusion of insanity is inevitable.

If the inebriety was periodical or dipsomania; if the crime was unusual in circumstances, surroundings, and without apparent motive; if there was a history of traumatism or exhausting disease or severe injury, and to this was added a heredity direct or indirect, the chain of evidence pointing to insanity and irresponsibility is more or less complete. If the evidence on any one or more of these points is wanting, as for instance on heredity or traumatism, the irresponsibility of the victim may still be found. These are only outlines of the ranges of facts which must be ascertained in the question of responsibility.

Exhaustive studies of these cases will often indicate the changed character, habits, temper, emotions and reason, that have been noticed by only intimate friends, not only when under the influence of spirits but when free from them. These are some of the factors from which to determine the mental capacity of the prisoner.

The medical examiner should always remember that the use of alcohol, continuously or at intervals, produces changes of brain circulation, vasomotor paralysis, congestion of the brain centers, disturbances of nutrition and other changes. Also, that the use of alcohol in moderation or excess impairs both brain and nerve function, and perils the integrity and capacity of the brain.

The use of spirits is often a symptom of brain disease, as well as an exciting cause, and the character of injury

produced from the use of alcohol in any way cannot be clearly determined.

From this basis of facts, the following general conclusions may be stated:

- I. The knowledge of right and wrong is no evidence of the mental health of the prisoner; his ability or inability to control or restrain himself are the real tests of responsibility. In determining this, the question of morbid impulses, of the craving for spirits, and of the control or domination of the passions over the reason must be studied.
- 2. The toxic use of alcohol brings on a degree of brain paralysis, with delusions and hallucinations, all of which may be concealed, except from a careful study.
- 3. The absence of all prominent symptoms of insanity in an inebriate is no proof that he is sane: the appearance of sanity and control of his acts is often only the twilight of a mental condition that is gone.
- 4. The fact of using spirits persistently, and to excess, so prominent in all these cases, indicates a form of mania; also, loss of self-control, and incapacity to realize the nature and character of his acts.
- 5. In all these cases there is a physical element, in which local paralysis, or perversions of brain centers may exist. Trance and hypnotic states, the direct or indirect result of alcoholic ethers, may make the victim fully unconscious and irresponsible.
- 6. Nothing but an exhaustive study of all the facts in the history of these cases will reveal the actual condition and measure of responsibilty. Anything less than this will fail, and result in great wrong and injustice.

The charge of Judge Edmonds, cited by Dr. Mann, gives a correct view of the general principles which apply in these cases:

"To be a criminal a man must have memory and intelligence to know that the act he is about to commit is wrong, and that he will be subject to punishment; also reason and will to enable him to compare and choose between the right and wrong.

"If he has not intelligence and capacity to have a criminal intent and purpose; if his moral and intellectual powers are so deficient that he has not will, conscience or controlling power; or if from violence or mental disease his intellectual power is for a time obliterated, he should not be held as responsible or punished for his acts"

I conclude this outline study with a general summary, which may be said to represent the latest facts and conclusions on this point:

- I. In all cases of inebriate criminals there is mental defect, and both incapacity to reason sanely or control their acts. An inebriate who does criminal acts cannot be of sound mind. A criminal who is an inebriate is not sane. No inebriate is fully sane, and no criminal can be of sound mind long.
- 2. The question for the medical witness is, How far was the prisoner conscious of the nature of his acts? and How far did he have control over his acts in a certain crime?
- 3. John Smith has committed a crime while under the influence of alcohol, and the law inquires into his mental condition at the time of the crime. His impaired mental health and responsibility is beyond doubt.

Is it possible from a study of the facts in the history of the prisoner, to determine the ranges of responsibility and accountability? Can we go into this penumbra region of sanity and insanity, and follow vice up to the dead lines of disease, and show where human justice should punish, and where it should forgive, as irresponsible?

- 4. The medical man approaches this problem from the scientific side, seeking the facts beyond all moral or legal theories of brain action. There should be no hesitation in stating what appears to be the truth, no matter how far it is beyond the popular intelligence of the present.
- 5. If the facts in the history of the prisoner point to a degree of unconsciousness of the nature and character of his acts, and the inability to control such acts, the

insanity of the prisoner should be assumed as a fact, far more likely to be true than the opposite. The limits of scientific study will not sustain any efforts to draw boundary lines where health and disease join.

6. When the fact of the inebriety of the prisoner is established, his sanity in a given case must be proven and sustained beyond all question or possible doubt. All the circumstances and conditions of the crime and life of the prisoner must bring evidence to prove this fact.

The general fact of inebriety reverses the natural order; his insanity must be assumed, and his sanity proven.

7. Finally, in all these cases, the medical witness is called to determine the physiological, pathological, and psychological facts and their meaning. The applications of these facts are for the law, court, and jury.

The medical expert of to-day must go beyond the theories of yesterday, or the facts on which yesterday's views were based. A newer, larger field opens up to-day, and the facts are more numerous, and indicate a clearer, wider view to-morrow.

Some Circulatory and Sensory Disorders of Neurasthenia.

By J. H. McBride, M. D., Milwaukee, Wis,

Superintendent Milwaukee Sanitarium for Nervous Diseases.

THERE is hardly any limit to the functional derangements that may accompany neurasthenia and its related conditions. The various organs being dependent upon the nervous system for the energy that directs their vital machinery it follows that to the extent to which the central power fails in its supply of force will the organs also fail in that smooth and balanced performance of function that belongs to a physiological condition.

Hence we find that the symptoms of neurasthenia or nervous exhaustion counterfeit those of almost every disease, and it is not always easy to separate the apparent from the real, and to decide whether the symptoms represent a functional or organic condition.

As this is especially true of the vascular and sensory disorders of neurasthenia I have thought it would be instructive to give a brief statement of the chief derangements of the sensory nervous system and of the circulation that are frequently found in this disorder.

Except inflammation there is scarely a disorder of the vascular system that is not observed in nervous exhaustion. We find functional derangement of the heart simulating valvular disease, transient congestions, anæmias, ædematous swellings; and in other cases still, a medley of symptoms that may combine some features of several diseases.

One of the frequent symptoms of neurasthenia is functional derangement of the heart and it not only alarms

the patient, but may cause serious inconvenience and distress. It is perhaps no exaggeration to say that four-fifths of the cases of this disorder suffer from functional heart trouble. The most usual form is excited action of the heart. Excited and even violent action of the heart may be caused by the most trivial occurrences, such as the receipt of a letter or a telegram, and the excitement may be so great as to cause faintness.

A lady patient of mine had an attack of syncope on receiving a telegram about a very ordinary matter, and at another time she fainted on seeing a messenger boy approaching the door.

There is a class of cases in which violent and tumultuous action of the heart occurs on lying down at night, and these paroxysms are sometimes so severe as to seriously interfere with sleep. In a few cases I have observed it as the first indication of an approaching break-down of the nervous system, and whereas at first it is usually transient and of mild form, it becomes more marked with each recurrence, and of longer duration. One peculiarity of this trouble is that the palpitation occurs only on lying down at night. The patient can lie down and sleep during the day-time, being entirely free from it; but at night the paroxysm comes on. This form of trouble seems to occur at about the age of puberty. Indeed tumultuous heart action with flushed face and throbbing temporal arteries occurring at night appears in subjects of nervous temperament at about puberty and sometimes in conditions of apparent perfect health.

I have seen a number of such cases. One, a young man of nineteen, who lost much sleep on this account, and during a period of two years he slept little at night, though he slept without difficulty during the day. In a female of sixteen this trouble prevented sleep the first half of the night for many months, though at times for several days she was entirely free from it. The pulse, which was normal during the day, would, on lying down at night, run up to 110, being of high tension and irreg-

ular. The patient afterwards recovered from the neurasthenic condition from which she suffered, and the peculiar cardiac disorder (if such it can be called) disappeared, though no remedy I gave had the least influence in relieving the special difficulty. From my experience I think it quite useless to give remedies for this special symptom, and where it occurs in neurasthenia it disappears on relief of the general condition.

Just why these paroxysms of palpitation and vascular excitement should occur only at night, I have been unable to decide; but then there are many symptoms of neurasthenia that are obscure and apparently past finding out. Cardiac debility, shown in palpitation or even in attacks of syncope on exertion, are not unusual in the severer forms of neurasthenia. One female patient who had been confined to bed for many months, fainted on being propped up in bed, and after regaining the power to walk she would faint if she walked rapidly or a little farther than usual. These cases of heart debility are found in those in which the prostration is extreme, and also where the patient has been confined to bed for some time.

Chills, followed by high fever, are not infrequent in cases of nervous exhaustion or more properly in cases of brain exhaustion. By brain exhaustion I refer to a class of cases, usually men, in which overwork has resulted in a set of symptoms referable almost entirely to the brain, the bodily health remaining good. There is usually cerebral congestion, sleeplessness, despondency, inability to apply the mind to work, or to consecutive thought, and loss of interest in usual occupations. This condition is generally curable, though it is sometimes the first step in the long descent of mental deterioration. The chills may recur at regular intervals and, with the fever, simulate malaria; and in fact are sometimes mistaken for it. I have seen a number of cases where this form of nervous chill had been considered malarial, and treated for it.

A gentleman sixty-three years of age who was under my care with chronic cerebral congestion and slight loss

of mental power, had severe chills for a period of six months, recurring about twice a month, and each chill followed by high fever. The chills were caused by anything that tended to exhaust him, over-exertion, worry or excitement. The fever that succeeded the chills usually reached a temperature of 102 and abated in about six or eight hours. The fever was accompanied by rapid and full pulse, and all the symptoms of marked cerebral congestion. On several occasions he was partially unconscious for a number of hours during the continuance of the fever, and he was always confined to bed on the succeeding day. It is interesting to note that this gentleman entirely recovered, and is now, at sixty-eight years of age, in good health.

Another patient, a lady, had severe attacks of congestion of the brain, during which she was frequently unconscious for several hours. These attacks were sometimes, though not always, preceded by a chill, and were always accompanied by severe headache, so that they might have been properly called congestive headaches. Though she was benefited, she was not relieved of these attacks by treatment; and now, after the lapse of twelve years, she still has them though they are not so frequent nor so severe as formerly. The attacks were occasionally accompanied by some strange and interesting mental phenomena, which I may detail at some future time.

Local congestions and anæmias are frequent in neurasthenia, for in these cases the circulation is unstable, irregular and inefficient. Patients have symptoms of bronchitis or congestion of one lung, that will appear and disappear in a few hours. Congestions elsewhere are frequent.

Bloating of the hands and feet occur where the circulation is feeble, and I have known it mistaken for Bright's disease. Bloating of the skin of the entire body is not uncommon. All these conditions of bloating of the body are worse in the evening, and appear and disappear irregularly during the disease. In two or three cases I have

observed bloating of one limb while the other remained perfectly normal.

In speaking of functional cardiac disorders mention should have been made of the paroxysms of sudden, rapid action of the heart that occur without any immediate exciting cause. In one such case I discovered a valvular murmur, though in intervals of the paroxysm the heart sounds were normal. This was observed not only once but many times. This phenomenon has been observed by others, but I know of no explanation of its cause.

An abnormally slow pulse is occasionally observed in neurasthenia. This is usually associated with evidences of deficient blood supply to the body generally, and is accompanied by cold hands and feet and feeling of chilliness in a room that is comfortably warm for persons in health. Some neurasthenics have a persistently rapid pulse, and it is usually weak in proportion to its rapidity. The heart in such cases being weak, it attempts to make up in rapid action for its lack of vigor. In other cases the rapid action is apparently due to lessened arterial tension, which removing the peripheral resistance, the heart works more easily and therefore more rapidly.

In regard to the sensory disorders of neurasthenia one is embarrassed with the multitude of facts that even a limited experience will furnish. If a record were made of all the morbid sensations of neurasthenics, volumes would be necessary to contain it. Certain peculiar sensations are associated with headache. One patient who was subject to congestive headaches had a feeling of having her skull filled with crumpled paper, as she called it. She said she could hear the paper-like substance rattling as the headache came on; and she desired to know if it were not possible for the membranes to become dry, so that the sensation could be thus produced.

These various sensory disorders are especially annoying, and in those cases where the prostration is extreme and the mind is somewhat weak and impressible,

they assume in the estimation of the patient a degree of reality that approaches the delusional.

A feeling of tire in the head is a common sensation. It occurs most frequently in men who suffer from brain exhaustion from overwork. One may be entirely free from this feeling of head weariness during the day, but the exhaustion of the little excitements of reading or conversing causes it to return toward evening. Those who are troubled with this feeling find that it is especially apt to be excited by reading, or anything that requires even a trifling mental effort, such as card-playing or listening to an interesting conversation. Many patients have a feeling of a band around the head, that seems to compress it, and it is often a persistent and distressing symptom. It more frequently occurs in association with brain congestion and in persons of full habit. In a few cases I have observed it in persons in whom there was no apparent tendency to congestion.

Dr. G. M. Beard long ago called attention to the frequent occurrence of tender spots on the scalp in neurasthenics, and anyone who has seen much of this disease must have frequently observed the symptom. In some cases the entire scalp is tender, in other cases there are irregular patches of tenderness. It is especially troublesome in combing the hair, and causes more inconvenience to ladies from the weight of their hair and the manipulations necessary in dressing it. Some ladies who suffer from nervous exhaustion find it necessary to leave the hair undressed, as the irritation of the hair "done up" snugly cannot be borne.

In a few cases I have observed a loss of sensation on one side of the face, occurring after excitement or extreme exhaustion. Anæsthesia occurs in every form and every degree in neurasthenia. One patient who had occasional periods of depression had for about twenty-four hours previous a loss of sensation in the right side of the face, with some trouble in articulating distinctly.

This patient subsequently had hemiplegia, involving the

right side and including paralysis of the right side of the face and deviation of the tongue to the right. The previous anæsthesia and difficulty of articulation were doubtless symptoms of the first stage of central degeneracy that finally issued in a sudden hemorrhage and paralysis.

Both pain and anæsthesia occurring in the extremities and in various parts of the body are common. Ladies especially are apt to suffer from pain in the legs at night, and they sometimes simulate the shooting and tearing pains of locomotor ataxia. These pains are sometimes persistent and annoying, and may be among the last symptoms to depart. As an instance of morbid sensations that border upon the delusional the following may be instanced:

A gentleman of fifty-eight was in a state of extreme nervous prostration, and was timid and despondent. After a sleepless night, when he would be nervous and apprehensive, he had a fancy that the air he breathed was hot in one lung and icy cold in the other. At times he had the feeling that the air passed from his lungs down his legs, and though he did not believe it to be a reality yet he would ask if it were not possible for it to occur. At other times he said he felt the air passing from the right lung to the right side and into the right arm. He was troubled with various other sensations of similar nature, all of which would only last an hour or two after rising in the morning. He would then be much amused in recalling them and had no trouble in recognizing that they were not realities. His mind was as vigorous as ever and he was quite capable of judging of the affairs of an extensive business.

Many neurasthenics have numbness of the legs when sitting, due to pressuse upon the edge of the chair. Patients are apt to think this an indication of a tendency to paralysis, but there is no necessary relation between them. Lying on one side in bed may produce numbness of the side and lying on the arm frequently causes entire loss of sensation in it for hours.

Some patients have uncomfortable sensations of heat and cold in different parts of the body. One side of the body may feel cold, while the other is apparently excessively warm, or one side may be normal while the other has a feeling of being very cold or very warm. Others suffer from cold feet; others from their feet being too warm. One lady slept with her feet uncovered in cold weather because of their feeling uncomfortably warm.

The epileptic patient who said that as a fit came on he had a "horrible smell of green thunder," aptly expressed the sensory disorders that separately and transiently afflict many neurasthenics.

One gentleman had what he called a constant "humming noise in his ears" that on over-exertion passed into a familiar tune that would haunt him for hours. Others hear familiar voices speaking to them, and others hear snapping noises as though something had burst in the head. Dr. S. Weir Mitchell has called attention to this phenomenon. The patient on going to sleep is apt to be wakened by a snapping or loud explosive noise, as one patient expressed it, as if a "gun had been fired off inside his head."

Apparently from mere exhaustion of the nerve centers the hearing sometimes becomes dull, and I had one patient who became hard-of-hearing on becoming exhausted and heard again with normal acuteness after resting. Apparently from mental apathy, patients are sometimes dull of hearing in cases of neurasthenia. Weakness and various defects of sight are common, and there are few neurasthenics who can read without suffering from the exertion. Some cannot distinguish letters of ordinary type, apparently from debility in the adjusting apparatus of sight.

Many patients have elaborate visions, and some court them at night to while away the hours of sleeplessness. One patient stated that after any unusual mental exertion his entire field of vision was filled with kaleidoscopic views of changing colors. He would have a confused view of a celebrated landscape painting he had once seen and which was at first of normal colors, then of confused coloring. This gradually faded to whiteness, and the vision disappeared in a series of flashes like sheet lightning. One patient saw double at a distance, though he could read ordinary print without difficulty. On looking out on the lawn one person appeared as two, and a forest a few rods away appeared as a confused mass of darkness. He had no paralysis, and his defects of vision disappeared as his nervous system regained its vigor.

The above are but a tithe of the peculiar manifestations of neurasthenia but they fairly illustrate the chief disorders of the vascular and sensory systems.

Finally, concerning neurasthenia, it may be observed that there is no disease more generally curable if treated under proper conditions; and it is equally important to observe that there is no disease more rebellious when methods of treatment not exactly suited are adopted.

TRANSACTIONS

OF THE

NEW ENGLAND PSYCHOLOGICAL SOCIETY.

The Society held its autumn meeting in Boston, October 9th, 1888.

Dr. Merrick Bemis, of Worcester, read the first paper, on "Mental Hygiene." The following is a brief abstract: The reader, quoting Prof. Jones, said:

"'It is the province of hygiene to determine the causes of disease, and formulate rules for their prevention.'

"Owing to the advance in knowledge, the improvement in sanitary construction, and the application of preventive measures (such as vaccination), life has been greatly protected and prolonged.

"Little has been attempted, however, to prevent the development of mental disease. This malady is increasing, notwithstanding all the appliances in use for its alleviation. To man belongs, in addition to his many sensual wants, those of a moral, intellectual and religious character.

"Man, free from bodily suffering and without any external cause, may suffer mentally to such an extent as to drive him to self-destruction.

"The mind, like the body, demands exercise for its own sake as well as for the welfare of the organization with which it is so closely interwoven. Mental inactivity leads to morbid mental conditions.

"Too close and long-continued mental exertion may result in extreme dejection or even in insanity. The mind, like the body, has its limitations.

"Among the rules of health which should be observed by those whose pursuits belong especially to the mind are: Temperance, both in eating and drinking; regularity of meals, daily exercise in the open air, the proper allowance of time for sleep, and cheerful and rational diversions.

"Disorders of the stomach, liver and bowels embarrass all the mental processes through their sympathy with the brain.

"Premature and forced exercise of the mind must always be at the expense of the physical constitution.

"Parents and teachers who are urged on by a mistaken ambition for the intellectual advancement of their children and pupils, defeat their own object and aims. Function and structure, ever going hand-in-hand, the powers of the mind should be unfolded in a just correspondence with the development of the physical organization.

"If the vital forces are unduly expended upon the intellect and brain, it must surely be at the cost of other functions and organs. There should be patience and delay in the training of the intellectual faculties, but the cultivation of the moral nature cannot be too soon commenced.

"In a *perfect* system of education, the moral, intellectual and physical natures are each subjects of equal regard.

"The present conditions of society, with its high state of civilization, its many arbitrary and extravagant demands requires the wise care, protection and guidance of every lover of humanity.

"The intellectual and moral powers being more highly developed than ever before, and consequently exerting a greater influence over the material organization and its functions, demand a more special regard.

"The nervous system being more susceptible, and its sensibilties more delicate and acute, the means directed to the care and development of the physical constitution must be expanded to meet the ever-growing new conditions."

Dr. J. P. Bancroft, of Concord, N. H., then read a paper entitled "The Bearing of Hospital Adjustments upon the Efficiency of Remedial and Meliorating Treatment in Mental Diseases," of which the following is an abstract:

"By 'Hospital Adjustments' the reader meant all external circumstances and conditions in the situation, surroundings and relations of the patient which may have an influence upon the senses and states of mind and feeling.

"The suggestions proposed would be mainly applicable to, first, the hopeful cases; and second, those who, while past hope of restoration, are still alive to the influences addressed to them.

"The subject of hospital construction lies at the foundation of any satisfactory system of distribution or classification of patients.

"This shapes and controls more than any one thing the quality of the whole line of influences which can be employed as curative or meliorating measures. The earlier plans of hospital building met the demands of the time, but did not provide the moral agencies we most need now.

"Insane hospital construction has not kept pace with the evolution of ideas as to the care and treatment of the insane.

"The main causes for this are the tyranny of precedent and pecuniary considerations. Justice to the present state of knowledge of insanity and the condition of its successful treatment, demand such innovations as will bring into operation a larger range of curative instrumentalities.

"Among the evils of our old monotonous architecture and large wards are the association of incompatible characters, and of the chronic with the more recent cases; the loss of much personal freedom; the sacrifice of the peace and rest of the quiet and timid patients by the noisy and demonstrative ones, and the injury suffered by the unsuspecting patient from exposure to contact with those of mischievous habits.

"In recent cases, in their nature curable, when all these adverse influences can be avoided, and when all external adjustments can be in harmony with the natural proclivities of the patient, signs of convalescence do appear earlier.

"The important question for the future to settle is whether these evils can be eliminated, and modified adjustments, not open to objection, be substituted.

"The fault underlying the defects under consideration is the failure to recognize and embrace in plans of buildings and appliances *all* the demands for the treatment of mental diseases.

"The best helps to moral treatment should have a recognition in original construction. Plans must have a flexibility measured only by the great diversity in form of disease and special symptoms; that is, they should have such diversified situations and divisions as to render it easy to adapt moral influences to individual needs, the salient feature being individuality of treatment. When the hospital shall have been made as efficient and attractive as can be, both the patient and the public will have made a great gain in the fact that residence therein brings no shock. The fault in the case of the evils instanced is, that along with the corrective agencies instituted, opposing elements are introduced.

"No change can be of greater value, or oftener meet urgent needs than a liberal variety of small apartments, or suites, located by themselves.

"The possibility of realizing ideal adjustments in old institutions, is, of course, greatly limited, but in all additional construction, and in all repairs in existing buildings or wards, there may be changes looking toward diversity, in place of monotony.

"Three features which should be made fundamental in every plan whatever the details, are, first and foremost, the noisy class of patients should be provided with separate buildings so located as to be beyond the hearing of others.

"A second feature entitled to the name of *requisite* is detached houses, placed in the grounds as they can be made convenient and attractive.

"Lastly, if large buildings are desired, such outward forms and internal divisions should be chosen as will admit

of the greatest variety of personal groupings, and thus give the physician greatly increased control of individual relations."

A third paper, read by Dr. Walter Channing, of Brookline, Mass., was entitled "Lunacy Legislation, as Proposed by Dr. Stephen Smith and Others."

Abstract of Dr. Channing's paper:

"Dr. Smith's propositions are well conceived, and his whole paper is calm and judicial in tone, but some criticism can be fairly made on it, especially from a medical point of view. Laws are largely made by the laity, who lose sight of the medical side of the case.

"It is doubtful whether there can be uniform lunacy laws for all the States at the present time, legislation is in such totally different conditions in different parts of the country, owing to the crude ideas of the newer portion

and the advanced ideas of the older portion.

"First to be considered was Division I.—Commitment of the Insane.

"Dr. Smith's propositions II., III., IV., were analyzed and Proposition VI., which relates to Commitment, criticised as not bringing out clearly enough the importance of early treatment.

"Propositions IX. and X. were taken up. These relate to the Applications for Commitment. Dr. Smith's suggestion that justice of the peace might be applied to, as well

as a judge, the reader did not approve of.

"Proposition XI., which relates to the medical evidence, is of great importance. Dr. Smith is right in stating that the fate of the alleged insane person hung on this evidence. The law should see to it, that the medical certificate is made by a properly qualified physician. The Judge of Probate should see that the law is complied with, rather than take any part in the actual commitment itself.

"Proposition XV. relates to persons with 'nervous affections,' not insane, going to the asylum without commitment. The reader thought such a voluntary commitment inconsistent with rigid lunacy laws. It did not seem

to him that the advocates of stringent commitment laws could realize that they exposed persons by the voluntary commitment to the very dangers against which they so carefully guard the ordinary insane. Perhaps they think that insane persons will not go into the asylums under the voluntary law. They are here in error, for in Massachusetts voluntary patients when admitted are usually insane.

"Do they further realize that the so-called nervous persons may become insane at any moment after admission? Probably not, and therefore Dr. Smith's attention should be directed to the danger of oversight in this direction. He has apparently been misled by the Massachusetts law, and knows nothing of the actual experience in Massachusetts as to the mental condition of voluntary patients. A voluntary commitment is a good thing for the insane, but quite unlike in its results what law-makers seem to imagine.

"Proposition XIX. refers to Family Care of the Acute Insane, which may be undertaken *first*, if the suitable surroundings can be found. As proposed, this is a mistake. Too much stress is laid on trying this plan *first*. It is

rarely practicable.

"Division II. treats of the Detention of the Insane.

"Proposition XXI. would place the insane in custody, under the care of persons of their own sex. Female attendants are undoubtedly best, but female physicians are not so good as men except for the application of local treatment.

"Proposition XXVII., relating to Supervision of the Insane, is one of the most important of all. As Dr. Smith says, this should be independent State supervision. The supervising authority should be qualified by education and experience, but he says nothing as to whether it should be medical, or not. This should be clearly stated. Medical care and supervision of the insane only are to be relied on: given up, the condition of the insane retrogrades.

"Division III., on the Discharge of the Insane, is generally to be commended. Proposition VII. refers to Boarding-out the Insane. This system is of some use in connection with a comprehensive system of supervision, but can only be favored when there is thorough medical supervision."

Dr. H. P. Stearns, of Hartford, Conn., read some notes on a paper on "Brain Surgery," by Prof. Macewen, which he read at Glasgow, at the meeting of the British Medical Association.

He spoke of the great importance of brain surgery, but it had been a terra incognito. Two factors were necessary to make an advance in this surgery. First, prevention of inflammation. This was now accomplished by antiseptic precautions. Second, localization of lesion. These conditions filled, Dr. Macewen then felt able to operate. Cases were then described. 1st, An abscess, near Brocas' lobe-no operation-death in thirty-six hours. Dr. Macewen before making an autopsy performed the indicated operation, and the abscess was opened directly onto. 2nd, Motor symptoms were the only guide. Left arm and leg were paretic. Lesion on right side near middle of ascending convolution—bone driven in—operation to be toward fissure of Rolando-trephined-good recovery. 3rd, Idiopathic-tumor over orbital cavity-lesion lower than middle portion of ascending convolution-tumor found half-inch in thickness-good recovery. Four other cases recorded. Cases could be localized in ascending convolutions. In frontal convolutions also lesions could be diagnosed.

Dr. Macewen said that he had operated in twenty-one cases and had been successful in eighteen. Three died. All the others in extremis when operated upon. Operations on the spinal cord had also been done when there had been paralysis of the lower extremities. He no longer hesitated to open into the spine—remove piece of fractured spine or exostoses, and a case was shown that had been help-less, but after operation got perfectly well.

DISCUSSION.

Dr. Joseph Draper, of Brattleboro, thought it seldom that we had so many and such good papers. He was glad to hear the first one, as it was a subject seldom written upon. The Society never had one before. It was very suggestive and useful.

The second subject we have discussed more; but have not worn out. He was glad to hear suggestions for a new departure in hospital architecture. We have been too much bound down in this country. In regard to lunacy legislation, it was a wonder to him how it came about that the committal of private patients should require the sanction of a judge.

Dr. Edward Cowles, of Somerville, said, the first paper was interesting, but he thought a more hopeful view might be taken. The fundamental principle of preventive medicine is a sound mind in a sound body. Much should depend on general education. We were on the verge of seeing better methods of mental education as well as physical.

In regard to the second paper, it is an event to have the rich experiences of a life-time condensed into a clear, lucid paper. The questions with which it deals are now of special interest at the McLean Asylum, in view of the new building plans. Strictures described by Dr. Bancroft have been felt there. But there are adaptations there not to be found in newer institutions. Plans could be more flexible in private than public asylums. These propositions presented to the trustees—series of small buildings for twenty to thirty patients, situated like gentlemen's villas—each approached in several ways—should be so arranged that any patient could be received at any time. Friends should be impressed with the fact that their patient alone was under treatment. Dr. Bancroft's propositions leave nothing to be said.

Dr. T. W. Fisher, of Boston, said he once wrote a lecture on mental hygiene. Maxims about mental hygiene were self-evident and should be read by all. In regard to Dr. Bancroft's paper, it was admirable. He had recommended that Boston should put up buildings for all her insane, something like Kankakee, but less rectangular. There can be great variety in the cost of buildings.

As to the subject of lunacy laws, it is a question as to whether it is expedient to have any changes. As now administered our Massachusetts' laws work fairly well. It is now most important to re-arrange our Lunacy Board. It should be separated from the Charity Board. There should be three or five men in it, and men of experience in the care of the insane.

Dr. Geo. T. Tuttle, of Somerville, said he was interested in the separation of the noisy from the quiet patients. People have a horror of insane asylums, because they see excited and violent patients.

Massachusetts' lunacy laws work well when you break them. The McLean Asylum gets more voluntary cases than other asylums. The voluntary law was good both for the patient and asylum. The McLean Asylum acts with the sanction of the Board of Lunacy and Charity, but the letter of the law was evaded. Most of the cases admitted under the voluntary law could be regularly committed. In view, however, of what might be done if the laws were changed, it might be best to let pretty well enough alone.

Dr. A. R. Moulton, of Worcester, said in regard to the second paper that the new hospital at Toledo was built on the cottage plan for 1,000 patients. Buildings were too regular but built for paupers as economical as possible. They cost about \$400 per capita. Ends of buildings about 1,800 feet apart. Patients at the extreme ends. There were forty detached buildings and four styles of architecture—very pleasant and quiet buildings—patients, contented. He visited Michigan, where they have the colony system. Kalamazoo has three farms—one, three miles away, has two wooden buildings. Two miles away there is a farm for men. The Pontiac Asylum has two detached buildings.

Dr. H. R. Stedman, of Roslindale, had not found excessive intellectual labor in mature individuals to be by any means so common a cause of insanity as had Dr. Bemis. Purely nervous symptoms and diseases seemed to be the most frequent outcome of such overwork, and when insanity appeared there were added the elements of heredity as predisposing, and anxiety and perhaps ill health, as exciting causes.

The obstacles in the way of construction to the full amount of freedom that patients in large establishments for the insane ought properly to have, was a suggestive point in Dr. Bancroft's paper.

Dr. Stedman instanced the opening nearly at the same time of four wards in the Danvers Hospital several years ago, in which had been grouped those patients whom it was thought might safely be trusted with a parole. doors were left unlocked until six o'clock P. M. patients were expected to be indoors at the closing hours and at the hours for meals. Of 120 out of about 700 persons not more than eight eloped in a year, and several of these were not returned to the asylum, but were kept at home on account of their improved condition. All but one or two of these wards had to be closed, and many of these patients deprived of proper freedom, because the construction arrangements of the hospital were such that the extra room left in these wards was required for a proportionately small number of more disturbed inmates who overflowed from other parts of the hospital.

The opinions of Dr. Channing regarding the recent practice of boarding-out of certain of our dependent insane in private dwellings, he thought valuable and timely, especially his views on the requisite safeguards in the way of supervision. He had long been interested in the system and had closely followed its operation at home and abroad.

He had recently visited a few (thirteen) of the boardedout patients in this State, and had found most of them comfortably situated, so much so that he was inclined to think the operation of the system to have been better than could have been expected from a non-medical administration of its details. At the same time several defects were noticeable; chiefly, in the selection of cases for this method of care, which could hardly have occurred under trained medical management, particularly of the details of the disposal, supervision and visitation of these patients.

Dr. Bancroft said, in hearing Dr. Bemis' paper, he wished there might be more done in instructing the public in mental hygiene—we are not doing enough. If we had suitable teachers there might be lessons on the relation of body and mind, to older pupils, which could

be made of great service.

Heredity was one of the very difficult things to reform. We cannot so readily get the control of the effect as in other directions. He had seldom seen anything presented which boldly considered the subject of heredity in relation to marriage, with the exception of a paper read last summer at the Prison Congress in Boston.

In regard to Dr. Channing's paper he regretted they did not have better lunacy laws in New Hampshire. In county almshouses in N. H. there are 450 insane persons without supervision. Attempts have been made to get State supervision, but so far without result.

WALTER CHANNING, M. D., Secretary.

SELECTIONS.

NEUROPHYSIOLOGY.

MENSTRUATION, ITS NERVE-ORIGIN—NOT A SHEDDING OF MUCOUS MEMBRANE.—By James Oliver, M. B., F. R. S., Edin.—In every healthy human female, during the so-called childbearing epoch, which extends, on the average, over a period of thirty-two years, the uterus becomes the seat of a periodically recurring functional disturbance, evidenced by the emission of a more or less marked hemorrhagic discharge. As the initial establishment and each subsequent recurrence of this monthly phenomenon is frequently accompanied by symptoms of a general as well as local character, we shall designate under the appellation menstruation the whole essential train of events, and not its mere outward manifestation.

The molecular world, organic as well as inorganic, exists in a perpetual state of trepidation, and equilibration of a vital character is the outcome of an inherent power of adaptation. Normally the structural and functional integrity of the organism is maintained by a mutual dependence of the organs upon each other, and according to the manner in which these, each and all, respond to those multifarious changes which, from time to time, arise in the environments of the individual. The variations in the waves of molecular motion occurring in every organ, and associated with physiological activity, are radiated to, and affect, however feebly, every ultimate tissue of the body. So completely is this intercommunication, through the medium of the nervous system, carried on, and so apt are the different structures of the organism to perform functions other than those for which they have apparently become specialized, that vicarious compensation may be readily established. In the case of double organs it is a noteworthy fact, with which everyone is familiar, that the removal of one may affect but little, if at all, the well-being of the body; generally the remaining organ at the same time becomes of augmented functional activity, undergoing slight or even well-marked enlargement. This compensatory change will be manifested, not only by organs recognized as active, but also by such as have hitherto been viewed as obsolete. In many of the lower organisms, where structural differentiation is ill defined, vicarious function is readily fulfilled. The animal may, for example, be turned outside-in with impunity, the vital integrity of the organism being still maintained unimpaired—the endoderm, already but feebly specialized, although set apart for assimilation, performing with ease the function of the ectoderm, that of elimination; while the ectoderm, in turn, assumes forthwith the power of assimilation, and discharges effectually a function hitherto foreign to it and performed previously by the inner layer. In the animal economy we see constantly enunciated the fact, too frequently ignored, that functional activity and structural integrity proceed together, hand-in-hand, and are regulated by a mutual action and

reaction upon each other.

If the functional activity of any organ be augmented, but not unduly, the structural integrity will be maintained and be rendered more perfect. Again, the more complete the structural arrangement has become, the more likely we are to find the function actively performed. ceral activities are now, through habituation, fulfilled in a somewhat automatic manner; and although these transitional states may at one time have excited a conscious sensation, they are at present stage of evolution wholly ignored by the higher cells of the cerebral lobes which participate in feeling. What is true of one organ of the body is likewise true of all the others. It is, therefore, more than probable that the physiological changes recurring from time to time in the uterus are anticipated by, and in reality the sequence of, a molecular disturbance arising spontaneously in some center located in the higher part of the cerebro-spinal tract, possibly somewhere in the medulla oblongata. The mere fact that the functions of the uterus may be revealed uninterruptedly after the spinal cord has been completely severed in the dorsal region is no criterion, and cannot justify us in concluding that there exists no representative higher center Structural evolution itself forbids the acceptance of such an hypothesis. Like all other nerve centers fulfilling a similar dispensation, this uterine center is undoubtedly beyond all volitional control, but is, nevertheless, capable of being disordered by emotional impressions. With this fact everyone is familiar. A sudden shock experienced during menstruation, and apart from any bodily injury, will produce, as I have frequently noted in some females, immediate cessation of the flow, and even interrupt for a more or less indefinite length of time thereafter, its amount and periodic regularity. The resulting disturbance will depend essentially upon the state of the nervous system and its

proneness to molecular instability.

With the approach and appearance of the monthly flow the whole frame, as one would naturally expect, participates more or less in the change, and the amount of disturbance experienced, as well as manifested, is commensurate with the power the organism possesses adaptation, and hence of equilibration. The simple determination of blood, because of increased functional activity, to the genital and, in many cases, to the other pelvic organs, of itself produces a definite alteration in the waves of molecular motion proceeding therefrom, and which, radiated in all directions, must necessarily affect the vascular state of other very important structures. In many chronic disorders, of whatever system, affecting the female, every observer must have remarked that, according to the menstrual type of the individual, there is often, either in anticipation or with the appearance of flow, a proneness to aggravation, or in some very exceptional cases, it may be, to alleviation of symptoms; and with the cessation or disappearance a corresponding gradual reversion to the original already stationary or slowly progressive state. In some few cases the loss of blood may account for much of the disturbance manifested, yet it cannot be the sole factor. In many women, where, from some inexplicable cause, there is for a more or less indefinite period a total suppression of the characteristic discharge, we may detect frequently such a regularly recurring alteration in the symptoms or manner of the patient as to place beyond denial a direct relationship. In no class of functional disorders do we find so regularly and markedly an interference with the outward manifestation of uterine activity as in epilepsy, a disease the pathology of which is still undetermined. It is more than probable, however, that as we may consider the epileptic female as epileptic throughout, even to the finger-tips, the interruption of the periodically recurring functional change in the uterus is the result of some occult condition of the corpuscular elements governing the activity of this organ, and wholly independent of any defective structural state of the viscus itself. The structural integrity of the uterus may, however, eventually

suffer, for inaction and overaction alike tend to exert a

prejudicial influence.

Gestation, as a rule, although not invaribly, determines for a period of nine months a cessation of the monthly recurring flow. Not infrequently, however, we see women who throughout one or more pregnancies continue perfectly regular, the amount or character of the flow being unaltered by the physiological process going on in the uterus. Usually the fertilized ovum affects in some unknown manner the uterine organ, thereafter destined to be its source of nutrition, and the gradual molecular variations so produced are radiated to the uterine center, alter the corpuscular state, and determine the sequence of events. During the period of lactation, and consequent activity of the mammary glands, we find not only the manifestation of the monthly recurring functional change of the uterus held in abeyance, but also the activity of the generative glands, as impregnation rarely occurs while the mother continues to suckle the offspring. Should, however, lactation be prolonged indefinitely, the secretion of milk may become more or less habitual, as in the case of the cow, and the generative glands regain their activity. The life of every organism is twofold: first, the maintenance of the individual, and then the perpetuation of the species. The latter, however, is always subservient to the former, and so long as there exists a demand for nourishment from the mother on the part of the child in utero, so long will the reproductive power, as a rule, continue latent. Occasionally, however, I have noted that while the child is being suckled by the mother the uterus itself, and the generative glands, may throughout continue active; and impregnation resulting, signs of early constitutional enfeeblement are apt to accrue. In inflammation of the mucous lining of the Fallopian tubes with puro-fibrinous exudation, menorrhagia is frequently an associated symptom, and apparently results from some interference with the nerve-supply to the uterus. In all mammals there are two ovaries, and the oviducts are known as the Fallopian tubes. Each oviduct dilates, on its way to the external surface, into a uterine cavity, which in turn opens into the vagina. In the monkey and man only do we find the two uteri coalesce inferiorly, producing a single cavity, into the fundus of which the Fallopian tubes enter. It is more than likely that the nerves governing the functions of the uterus are transmitted along the Fallopian tubes, and although menstrual disorder may frequently result, with distinct pathological changes existing in these tubes, we must not too hastily conclude that these structures, per se, govern the uterine changes.

The true nature of the catamenial discharge is still conjectural; yet its elimination from the body renders it highly probable that, having already served some special end, its detention in the blood may exert some delete-

rious influence on the animal economy.

It is generally admitted that ovulation and menstruation are coincident; that they may or may not be, I am not prepared to dispute: that, however, they are invariably associated, there seems to me much reason for doubt. That the discharge of an ovum may, and frequently does, occur quite independently of menstruation, I have no misgivings. No one would entertain the idea of gauging the reproductive power of the female either from the regularity or amount of the catamenial discharge. I have occasionally noted that women who menstruate with marked irregularity are specially prolific.

It is alleged as an established theorem, that from the period of puberty to the climacteric age there is, besides a gradual death of the mucous membrane lining the whole uterine cavity—which must ever occur to be compatible with life-a more or less regularly recurring and complete death of this coat. In the whole animal kingdom we search in vain for a physiological change truly analogous with this. The serpent, it is true, may shed its skin more or less intact; but ere it casts off the old coat a new one is already regenerated, to protect its body from all extraneous injurious influences. In vital structures change is wont to be gradual-creation and destruction proceed together. There is apparently no departure from this inexorable law. Death of the mucous lining of the uterus takes place imperceptibly; the change is one ever going on, as in all organs of the body.

In several cases I have examined uteri removed from women who have died, not only during menstruation, but just before an expected period. In two cases the death was sudden, the patient at the time being in apparent good health. In three cases the uterine organ was invaded by growths of a fibroid character, which were chiefly sub-mucoid. To the naked eye the mucous lining, in all, appeared in every respect like that of a normal uterus

examined at any time indiscriminately. In no case did I detect any breach in the continuity of the lining membrane of the uterus, except in those in which this organ had become the seat of fibroid growths. In such the mucous lining had in places become markedly thinned, or even vanished altogether, because of a constant vital pressure exerted on this coat by the underlying new growth. Here gradual absorption had resulted, very much in the same manner as bone and soft tissues disappear before the constant pressure of an increasing aneurism. I have never at any time detected any evidence of structural change, microscopically, in the inner linings of the uterus, in cases in which this organ has been removed from the bodies of females who have died either during or just before an expected menstruation. The glands which stud the inner coat of the uterus in its entirety, consisting of columnar cells, lined by a basement as well as a limiting membrane, have, however, shown marked enlargement, in many cases so pronounced that the outline, not only of the separate cells, but even of the gland itself, has been The columnar cells appear swollen, and contain frequently large corpuscular-looking bodies, believe to be the simple manifestasion of increased functional activity. Prior to cutting, by freezing in gum the tissues had been hardened for two days in spirits, and finally in a weak solution of chromic acid. The sections I stained in a variety of ways, my best stain, however, and that affording clearest definition, being iron and pyrogallic acid.

Those who support the denudation theory assert that each recurring monthly flow is anticipated by a fatty degeneration of the mucous lining of the uterus; that blood is extravasated into its substance, and eventually the whole, becoming disintegrated, is washed away imperceptibly with the escaped blood. A new mucous membrane is thereafter by degrees regenerated from the inner layer of the muscular coat, which, in its turn, too, like its predecessor, must undergo a similar degenerative change, and ultimately be removed from the body. Some of the lower animals, it is true, retain the power of reproducing limbs, and possibly other parts of the body removed by accident. If, however, the separation of the part be too frequently practiced, we eventually exhaust the powerwholly irrecoverable—the structural integrity of the regenerated limb or tissue becoming less and less marked with each removal. Clinically, if the mucous membrane were shed with each catamenial flow, it must be capable of completing its cycle of degeneration, shedding and regeneration, in an incredible number of days. Many are the menstrual anomalies which preclude the acceptance of

such a phenomenon.

Taking all the facts into consideration, it is more than probable that the recurring monthly discharge in the human female is a secretion, or rather excretion, from the inner lining of the uterus and Fallopian tubes, without degenerative change other than that commonly associated with augmented functional activity, and comparable with that occurring in any other organ of the body under similar circumstances.

On the Necessity for a Modification of Certain Physiological Doctrines Regarding the Inter-Relations of Nerve and Muscle.—By Thomas W. Poole, M. D.

The Intestinal and Uterine Muscles .- Dr. M. Foster states that section of the vagi "renders difficult the passage of food along the œsophagus," and causes "a spasmodic contraction of the cardiac orifice of the stomach; in other words, the tonic action of the sphincter is increased;" (Phys., pp. 346, 347)-facts which sustain what has been already stated above as to the non-paralyzation of the muscles concerned, after section of their nerves. The peristaltic movements of the intestine, he states, may occur "wholly independent of the central nervous system," and are "at bottom automatic" (p. 348). We have it on the authority of the late Dr. W. B. Carpenter, F. R. S., that "the intestinal tube from the stomach to the rectum is not dependent upon the nervous centers either for its contractility or for its power of exercising it, but is enabled to propel its contents by its own inherent powers." (Hum. Phys., p. 410.) So also of the uterus, the contractions of which are not due to a reflex activity of the spinal cord, but to its own inherent power of contracton; parturition having taken place after destructive injury and paralysis of the cord, and even after somatic death. (Ib., pp. 979, 980.) In these cases, also, the nerve would seem to be useless as the ally of the muscle, but would play an important part in controlling and regulating, by antagonizing its contractile energy.

I must notice, in this connection, an observation of Dr. M. Foster regarding the bladder. He says: "The

escape of the fluid [from the bladder] is, however, prevented by the resistance offered by the elastic fibers of the urethra, which keep the urethric channel closed. Some maintain that a tonic contraction of the sphincter vesicæ aids in, or, indeed, is the chief cause, of this retention. The continuity of the sphincter vesicæ with the rest of the circular fibers of the bladder suggests that it probably is not a sphincter, but that its use lies in its contracting after the rest of the vesical fibers, and thus finishing the evacuation of the bladder. On the other hand, the fact that the neck of the bladder can withstand a pressure of twenty inches of water so long as the bladder is governed by an intact spinal cord, but a pressure of six inches only, when the lumbar cord is destroyed or the vesical nerves are severed, affords very strong evidence in favor of the view that the obstruction of the neck of the bladder to the exit of urine depends upon some tonic contraction maintained by a reflex or automatic action of the lumbar spinal cord." (Phys., p. 448.)

But this experiment admits of a very different inference. We have just seen, on the authority of Dr. M. Foster, that section of the chief moter nerves of the stomach "increases the tonic action of the sphincter" of the stomach, as we had before seen it does of the entire contractile tissues of that viscus. We have a right to look for a similar increase of tonic contraction in the bladder, when deprived of its nervous connection with the spinal cord, or when the latter is paralyzed. Admit that here, as in the examples cited above, the spinal nerves exercise a restraint over the contractile fibers of the bladder, tending to prevent its contraction. With this restraint intact, the bladder is able to bear a pressure of twenty inches of water before the sphincter is overcome; whereas, with nerve influence withdrawn by section or paralysis, and the muscular fibers of the bladder set free to contract (as in the case of the œsaphagus and stomach), the resistance at the outlet, though also relatively increased, is overcome by the superior expelling force from above, with the aid

of only six inches of water pressure.

The same principle applies to involuntary discharges from the rectum, which Drs. Todd and Bowman say is due not to paralysis of the sphincter, against which the feces are driven, but to the "active pressure of the parts above which are not paralyzed." (Path. Anat., p. 180.) The "parts above" are the intestinal muscles, which, in

the last stages of exhausting disease (when such discharges usually occur) have attained their freedom, just as the arterial muscles do under like circumstances, owing

to the general decadence of nervous energy.

Vomiting of Pregnancy.—With the evidence before us as to the contraction of the gastric muscle on severance of its nerves, vomiting in general may surely be regarded as due to nerve depression rather than to nervous excitation. An additional observation in proof of the same is to be found in the fact that injury of the vagus may produce constant vomiting. (Bryant's Surgery, Amer. Ed., p. 208;) and further, that vomiting is mentioned by Dr. C. Bastian among the symptoms of hemiplegia. Brain Disease, p. 56.) An explanation of the vomiting of pregnancy would be found if we might assume that a monopoly of nerve energy was being expended in the uterus, owing to the extraordinary development taking place in that organ, thus starving the gastric nerves, so to speak, which, no longer able to restrain the gastric muscle, permit the untimely and abnormal contractions of that viscus. That this occurs chiefly in the early months of pregnancy might be accounted for by the unusual demand rather suddenly made upon the nervous resources, which tend to equalize their expenditure, as the months go on, and the organism becomes accustomed to its new condition.

How Arterial Sedatives Act.—Ergot of rye is an agent which produces in a marked degree contractions of involuntary muscular fiber everywhere, but whose effects are especially seen in the arterioles and uterus. Must not a uniform law or rule govern the occurrence of such contractions? We have seen that they occur best under a deprivation of nerve action, and are never so complete as in the general death of the body. How then can ergot be regarded as a stimulant? Who would ever think of administering it in cases of faintness and exhaustion as a restorative of nerve energy? Must it not act, like nerve section and nerve paralysis, in lessening the tone of the vascular and motor nerves, so setting free the contractile energy of the arterial and uterine muscles,

which contract accordingly?

Dr. Sidney Ringer grows enthusiastic over the action of aconite in acute congestion of the tonsils, and that, too, in doses too small to reduce the action of the heart. Aconite undoubtedly causes contraction of the arterioles, and accordingly on the theory of the day it must be

classed as a stimulant, as it actually has been by some authors, Dr. Edward Meryon, M. D., F. R. C. P., for instance, who holds that "it stimulates the dormant fibers of Remak and by so doing, diminishes the caliber of the arterioles." (Rational Therapeutics, p. 52.) Errors of this kind must be charged to the misleading guidance of an erroneous theory. Aconite is a profound paralyzer, and in small doses, by lowering the activity of the vasomotor nerves, it frees the contractile power of the muscular bands of the arterioles, which contract accordingly, lessening or curing congestive states.

Is not this precisely the *rôle* of the galvanic current, when brought to play upon the cervical sympathetic, say in exophthalmic goiter? The thyroid gland and its appendages are being overfed by dilated arteries. Bring about contraction of these arterial tubes, by lowering the activity of the vasomotor nerves in the way just indicated, and the congestion and hyperplasia are relieved, if not

cured.

But the electric current, for therapeutic purposes, has been classed as a stimulant! So has strychnia; so ought to be prussic acid, for it, too, causes spasms and convulsions of muscle! So is fatal hemorrhage. All stimulants, as well as aconite, on the theory of the day!

It would require a volume to elucidate these points, and I must condense what I have to say into a few paragraphs.

Strychnia a Paralyzing Agent.—Dr. Harley has shown that strychnia probably acts by preventing the oxygenation of the blood, which Dr. C. B. Radcliffe very properly holds cannot be the rôle of a stimulant. Dr. Ringer tells that "after traumatic and strychnia tetanus, the functions of the motor nerves and muscles are depressed, the motor nerves conveying impressions imperfectly." But may not this motor nerve depression be due to a reaction from previous over-excitement? Dr. Ringer says no! and adds, "Strychnia directly depresses motor nerves, for large doses kill without exciting convulsions, when the motor nerves are found to have lost their conductivity" (Therapeutics, 5th American Ed., p. 499), which in physiological language means that the nerves are paralyzed.

Dr. W. A. Hammond has recounted an experiment performed by himself and Dr. S. Weir Mitchell which, he says, "shows that the action of strychnia is to destroy the nervous excitability from the center to the periphery."

(Dis. Nerv. Syst., p. 539.)

Dr. Ringer further furnishes strong evidence that paralysis, and not over-action, is the condition of the nerve centers in tetanus. He instances "certain poisons, like gelseminum and buxus sempervirens, which produce at the same time both weakness of natural co-ordinated reflex action, cord paralysis and tetanus." He says "it is impossible that the tetanus should depend on stimulation of the cord, for we have seen that the tetanus was preceded by considerable depression of the cord and continues until the depression ends in extinction of all cord function;" or, as he says again, the tetanus "occurred in a dying cord." (London Lancet, Feb. 17, 1887, p. 228;

Braith. Retros., July, 1887, p. 98.)

In strychnia poisoning, death occurs from asphyxia (Fothergill, Antag. Ther. Agents, p. 55) with its contracted and empty arteries and engorged veins; the precise condition of the vascular system produced by destruction of the spinal cord, as in pithing, as already shown in a previous page. Do not the foregoing facts show that strychnia does not kill as a stimulant, or excitant, of the spinal cord? Moreover, medical literature clearly shows the value of alcoholic stimulants in strychnia poisoning, but I cannot delay to quote it. On the other hand, chloral hydrate, which has some reputation in these cases, is "not by any means antagonistic" to the action of strychnia. It acts by simply lessening the contractile energy of the muscles, like other anæsthetics, by de-oxidizing the blood, and thus retarding the chemical processes in the muscle, whereby its contractile force is generated. In this way the convulsions are arrested, and time gained for the elimination of the poison. But dangerously large doses-seven or eight grammes (about two drachms)—are required for this purpose. (Lyman's Anæsthetics, Wood's Library. pp. 264, 267, 275.) nia affects paralyzed, sooner than unparalyzed muscles," writes Dr. Ringer; but this is not exact. Strychnia does not affect the muscles at all, as Dr. R., himself, shows; and the muscles are not paralyzed in the case to which What he means is that strychnia induces twitches and spasms in muscles whose nerves are enfeebled, sooner than in muscles whose nerves are acting normally. Why is this? If strychnia were a stimulant, would it not sooner excite vigorously acting nerves than enfeebled ones? But since its effect is to cause "depression of the motor nerves," nerves already suffering in this way have their vital activity more easily extinguished, and their muscles set free, than is the case with healthy nerves. The same thing is equally true of the other paralyzer, electricity. Twitches, tremors, spasms and tetanus are all but varying stages of nerve paralysis and of muscular freedom.

CLINICAL NEUROLOGY.

Spinal Concussion .- Dr. C. L. Dana, of New York Post Graduate (editorial, with addition from "Railway Surgeons' National Association Transactions)," is of opinion that the concussions, frights and shocks of railway accidents may produce: I, Functional disorder of the spine, viz., traumatic neurasthenia, or as others call it, spinal anæmia or hyperæmia, or "railway spine." This is by far the most common sequel. 2, Chronic organic disease, such as meningitis, locomotor ataxia, lateral or multiple sclerosis, syphilitic disease of the cord. This result is rare. 3, True concussion, with suspension of the functions of the cord from shock, just as the functions of the brain are sometimes suspended by blows on the head. These cases are extremely rare. Besides these, the spinal column may be injured in various ways, the bones broken, the ligaments torn, or hemorrhages produced, usually of a meningeal origin.

Dr. C. B. Stemen (Med. Rec.), of Ft. Wayne, has observed the case of a man working in a gravel pit, in 1874, who sustained a fracture of the eleventh dorsal vertebra with compression of the spinal cord, and complete paralysis of the lower extremities, and was reduced to a markedly depressed condition, but a short time thereafter he cut down and removed an arch of the vertebra with good results. The bedsores healed kindly. The man is still alive, but his extremities are paretic. He had repeated the procedure in four cases without result, but believed that, where the cord was not injured, the operation would

prove successful.

Dr. D. Prince, of Jacksonville, had had under observation a case of a man struck by a wagon, so that his lower extremities and bladder were paralyzed. The tenth dorsal vertebra projected considerably above the eleventh. The patient never recovered, but lived a year thereafter. He would not hesitate in future to follow Dr. Stemen's advice,

Dr. J. Harvey Reed, of Mansfield, said that spinal injuries were to be considered under two heads; pseudospinal, which were trumped up; and true spinal injuries, about whose diagnosis there was no question. He agreed with Dr. Stemen. Dr. A. W. Redenour had trephined the spine in a few cases, with favorable results. He had observed a case of atlas fracture. The accident occurred five years ago. The fractured vertebra is pressing on

the cord, and nearly caused death recently.

Dr. Murdoch advocated Dr. Stemen's procedure in suitable cases. He did not believe that spinal symptoms could result, unless there were a demonstrable lesion in the cord. Dr. W. A. Ward, of Conneaut, O., agreed with Dr. Reed as to case in diagnosis. He had under observation the case of a lady who had been struck by a gravel train. She sued for damages. He found that she was hysterical, and reported she would recover as soon as the case was settled. It was compromised. She died a year later, and, although he could obtain no facts, he was convinced her death had no relation to the injury.

Dr. V. P. Gibney said there was no such case in

diagnosis of spinal concussion, as had been claimed.

Dr. W. H. McCandles, of St. Louis, had observed the case of a brakeman injured by the breaking of a brake. He was brought in with seeming paraplegia. He suddenly claimed to be blind in one eye, and gradually lost his

voice. The man lay five months without moving.

A railroad laryngologist and ophthalmologist pronounced his eye and larynx normal. Pins and needles were thrust into his limbs without effect. The extremities were cold and œdematous. He was, later, said to have joined a companion and drank, and to have proven to be a malin-

gerer.

Dr. T. McIlvaine, of Peoria, had observed the case of a woman who, in a railroad accident, was thrown to the floor. She got up, made no complained. For five months she resumed her usual duties. Then she complained of a tender spot in the spine, and finally, became helpless. She brought suit for \$5,000. Dr. McIlvaine was unable to find any external lesion. She won the case, but pending an appeal, she was carefully watched without result. The money was paid, but the woman had remained helpless. Such cases were far from infrequent, and must be recognized.

CLINICAL FEATURES OF THE URIC ACID HEADACHE.-Haig, in "St. Bartholomew's Hospital Reports," Vol. XXIII, p. 201, defines this as a headache which recurs at intervals of three days to a week, or from that to one or several months, throughout a large number of years in the life of an individual. It lasts from twelve to twenty-four hours and then goes completely away until the end of the interval. The attacks are rendered less frequent and less severe by a diet poor in nitrogen. There is often a family history of headache or of gout, or both. The author has frequently found this headache associated with a large excretion of uric acid and has noted that the administration of an acid will stop the excessive excretion of uric acid and remove the headache in one or one and a half hours. He reports several cases in full, together with a tabular arrangement of the principal features of interest. The headache is probably caused by the action of some poison in the blood (uric acid) on a nervous (vasomotor) system especially sensitive in some parts of the cranial circulation. Strychnine is sometimes very useful in this headache, on account of its tonic action on the vasomotor center. Symptoms of gastro-intestinal derangement are notable by their absence. The tongue is clean, the bowels regular, food is well taken, the pulse is slow, and the temperature normal. This is in marked contrast to the frontal headache, furred tongue, fever, rapid pulse, and disgust of food, of real gastro-intestinal derangement. The sulpho-cyanide is usually in excess in these headaches occurring in gouty or rheumatic families, as Fenwick has remarked. The author then lays stress upon the alliance between these headaches and epilepsy, as illustrated by one of his cases, in which the two affections appeared to improve together under a proper diet .- American Journal of the Medical Sciences, July, 1888.

NARCOLEPSY.—BRIEF REPORT OF A CASE IN PRACTICE—D. H. Dowsley, M. D., M. R. C. S., E., Kingston, Canada, reports in the *Canada Medical Record*, the following case:

"A blacksmith by trade, aged about twenty eight years, a powerful, well-built man, apparently in good health, was subject to short attacks of deep sleep, lasting a few minutes, from which he would awake refreshed as from a natural sleep. The attacks of sleep would occur at any time, regardless of the hour of the day, or degree

of temperature. On one occasion when driving to town in the morning, about nine o'clock, of a winter day, sitting upright in a sleigh with a companion by his side, and driving through pitches, he fell into a sound sleep, still retaining his position upright in the seat. He slept for a few minutes and then awoke apparently quite refreshed.

"There were no symptoms of premonition; no symptoms of a convulsive nature, either preceded or followed the attacks, which occurred at intervals of a few weeks, and sometimes more frequently. The family history, as far as known, was good. The patient was treated with arsenic and iron. He thought he had made some improvement from the fact that the sleeping attacks did not occur so frequently, otherwise there was no change, the attacks being the same when they did occur. Speaking from memory, the attacks in this case have occurred during the past fifteen or sixteen years with the frequency stated."

[A course of quinine, iron and arsenic with bromide of ammonia, as for malarial toxhæmia affecting the ganglionic system, has proven more satisfactory in similar cases in our experience.—ED.]

Paralysis of Motor Bulbar Nerves in Exophthalmic Goiter.—G. Ballet (Gazette Hebdomadaire, No. 9, 1888) states that a man thirty-four years old developed all the symptoms of Graves' disease as the result of violent excitement caused by a fall into the sea. At the same time occurred hysterical symptoms—left-sided anæsthesia, diminution of the sensibility of the right half of the body, globus hystericus, etc. Subsequently the patient developed a complete exterior ophthalmoplegia and a bilateral facial palsy. Ballet thinks it is more than probable that the symptoms in this and also in other cases of Graves' disease are to be referred to a bulbar origin.—Medical and Surgical Reporter.

Antipyrine and Sweet Spirits of Niter Compound.—Dr. Ludwig Bremer, of St. Louis, has made an investigation as to the toxic effects of the compound formed by mixing antipyrine and sweet spirits of niter, and gives it as his opinion that the compound possessed no poisonous properties.

NEUROPATHOLOGY.

LESION OF THE GASSERIAN GANGLION .- A young man, age twenty-eight; unmarried; shepherd by occupation; in good health previously, was, as the result of severe sunstroke, seized with fever and headache with loss of consciousness. At the end of three weeks the headache alone remained, but sufficiently severe to cause the patient to apply for admission to the Madrid General Hospital. He then presented the following conditions: pallor, general emaciation, paralysis, insensibilty of the left half of the body, ptosis with slightly contractible pupil and absence of vision in the left eye. Examination with the ophthalmoscope showed the right eye to be healthy, and in the left insensibility of the cornea, the histological elements of which were intact, dilatation of the pupil, pallor of the retina with decrease in size of its arteries, and an almost varicose condition of the veins. The rest of his organism was in a normal condition. Dr. Espina, of Capo, diagnosed a lesion of the left gasserian ganglion, and gave a grave prognosis after beginning a treatment with potassi iodidum. The patient was carried off by an intercurrent pneumonia.

Post-mortem—The left gasserian ganglion was found degenerated, and so adherent to the bone that it could not be removed without tearing off with it the periosteum and several fragments of the temporal and sphenoid bones. The ganglion formed an indurated mass in which all nervous organization had disappeared, and with blackish clots in the nutrient arteries. This degeneration was probably due to an inflammation following sclerosis.—

Revista de Medicina.

THE NEURAL THEORY OF CHOLERA.—This theory finds new confirmation in the treatment by nitrite of amyl employed by Dr. Theobold A. Palm and reported in a late number of the *British Medical Journal*, as follows:

"During an epidemic of cholera in Japan in 1879 it occurred to me to make trial of the inhalation of the nitrite of amyl in the treatment of the collapse of cholera. I did so upon the consideration that this drug appears to have an antagonistic action to the cholera poison in its effect upon the vasomotor nerves. The latter causes a dilatation and congestion of the vessels of the viscera, and a corresponding contraction of the more superficial

vessels; while we have in nitrite of amyl an agent which, whatever its effects may be upon the visceral circulation, produces a marked dilatation of the superficial vessels, and must therefore, to a corresponding degree, relieve the congestion of the visceral circulation. I found that cholera patients in a state of collapse could inhale it very freely before an effect was produced. My plan was to hold a bottle of it under the nostrils, directing the patient to sniff it up freely, and to repeat this frequently. Under its influence a small, thready pulse, increased in volume, and when the pulse at the wrist was imperceptible it became perceptible. I have reason to think that in some cases it was the means of saving life. I regret that, owing to the accidental destruction of my notes taken at the time, I can give no exact account of the number or details of cases in which it was made use of, but this hint may be of use to others who will have more opportunity than myself of further testing its value."

NECROSIS AND DEATH AFTER SIMPLE BONE FRACTURE IN AN ATAXIC.—The brilliant little Satellite to "Sajou's Annual" gives the following from Neurologisches Centralblatt, September I, 1888, reported by Wallich: "A man fortynine years old, who twenty years previously had been infected with syphilis, and at the time of injury presented all the typical symptoms of advanced ataxia, fell against the side of his bed. He experienced no pain, but a fracture of the femur was found by Wallich. Upon crepitation of the fragments the patient likewise experienced no pain. The knee of the affected leg showed swelling and fluctuation. After several emptyings of pussy joint-fluid, and after repeated openings and drainings of one of the pus-pockets near to the fracture, colliquative diarrhea and fever set in and the patient soon died. Section demonstrated the usual pathological appearances of tabes. A great portion of the femur was found necrosed, and deep in the muscles and surrounding tissues a large abscess penetrated."

NEUROTHERAPY.

NEUROTIC TREATMENT OF CHOLERA INFANTUM.—C. H. Hughes, M. D., St. Louis, in the *Medical Standard* for September, says: Cholera infantum is best combated by bearing in mind the essential features of neural depression, of central nerve starvation, and of peripheral nerve

irritation from septic conditions in the alimentary canal. The nervous system is first of all to be sustained by free libations of cold water and cold peptonized milk, by the peripheral impression of cold water on the cutaneous surface, as well as by the replenishing of the blood by cold water given by the mouth to satiety of thirst; cold water or cold milk punch or cold egg-nog enemata. Hot drinks and hot bathing are to be used later. The tonicity of the vasomotor nervous system needs attention as well as the nutrition of the cerebro-spinal nervous system. Rest, prompt and effective, of the central nervous system, must be secured by remedies which tranquilize and restore. Cold water soothes the brain and nerves to rest and sleep. Opium (in minimal doses only) sustains the central nervous system against peripheral shock. Ammonium and sodium bromide likewise guard the system against the waste of peripheral irritation and predispose to central nerve rest. Chloral, at night, is calmative and antiseptic. with the hypophosphites, sustain the central nervous system against exhaustion. Malted nutrients, boiled milk and beaten eggs sustain the central nervous system against assault until reparation becomes complete. Creosote and the carminatives, especially peppermint, are antiseptic and tonic through their influence on intestinal nerve-endings. Atropin in minute doses $(\frac{1}{1200}$ to $\frac{1}{1500}$ gr.) is of value.

The following formulæ are based on the principles

previously discussed:
(1) R Creosote .

	Ol. Carophyll					
	Spt. Menth. Pip. āā.				gtt. i	
	Tr. Opii				gtt. x11	
	Tr. Camph				gtt. i	
	Spt. Vin. Gal				3 i	
	Syr. Zingiber .		•		3 i	
	Syr. Tolu, q. s. ad. ft				3 xlviii	
M.	S. 3 i thrice daily,	or	after	each	passage, to	an
infant	six months to a year	ol	d.			
	Natr. Brom				•	
(-) 10	Ammon. Brom. āā.					
	Syr. Hypophosph. Co.					

Aquæ Cinnam. 3 xxiv

M. S. 3 i in cinnamon or peppermint water, or boiled

milk, thrice daily, or oftener, as indicated.

(3) R	Chloral Hydrat.			3 i
(0)	Ammon. Brom	.,.		3 i
	Syr. Tolu .			3 viii
	Aquæ Menth. Pip.			3 xvi
M.	S. 3 i or less, ac			

In lieu of hypophosphites, he often substitutes Fairchild's essence of pepsin and diastic essence of pancreas. Ten to twenty drops are given, combined with a solvent for the bromides, and the dose given once or twice daily. Other modifications are made, as needed, but this is, in the main, the outline of a plan used with marked success. Of course, hepatic inaction may need attention and treatment. Quinine and syrup of coffee are often indispensable additions, with a sufficient quantity of syrup of wild cherry and liquorice extract to make the whole into a palatable mixture.

WHY THE BROMIDES SHOULD BE LARGELY DILUTED IN EPILEPSY, by C. H. Hughes, M. D., St. Louis.—Since the introduction of the bromides into the therapeutic management of epilepsy, my constant habit has been to direct the admixture of each dose with a glass of water or of milk, in order to prevent gastric irritability and to secure the rapid absorption, and finally, for a reason based on clinical results, whose physiological basis has since been demonstrated by Novi, by experiments on the "concentration of the blood as a condition of excitation to the central nervous system," showing that spasm of the vessels took place, when the thickness of the blood reached double that of the normal density—a state induced by injecting into the veins a ten per cent. salt solution. spasm was not due to direct stimulation of the muscles, because curare prevented it, nor to the action of the salt on the peripheral nerves, nor to the changing of the hæmoglobin into methæmoglobin, but to stimulation of the brain. Section of the medulla oblongata intercepted.

Here is a physiological fact which may aid in explaining and treating epilepsy and similar forms of spasm in other disease; eclampsia puerperalis, eclampsia nutans, the spasms of Asiatic cholera, etc. The influence of warm water baths and enemata over infantile convulsions would seem to find a more rational explanation in the dilution of the blood than in the so-called "relaxation" induced. The value of copious draughts of warm water, so insisted on by Dr. Hendrix, is better understood with this explanation.

It is very probable that the thickening of the blood, drained of its serum, has the same effect upon the motor centers of the muscles, as sudden anæmia and withdrawal of arterial and arteriole pressure, such as is displayed in the convulsions of decapitated animals and the cadaveric rigidity which appears when the blood forsakes the arte-

rial channels for the venous.

Dilution of the remedies given in epilepsy would therefore seem to be indicated, to thin the blood and diminish vasomotor irritability, and consequent tendency to vessel spasm. Perhaps to this thickening of the blood is due the recurrence of epileptic attacks. The thickening irritates the vasomotor and psychomotor centers till their irritability is exhausted. The rest, inertia and slumber, after the attack, makes less demand upon the blood than the active state of the individual, until a time is reached after the return of the accustomed demands of waste and repair, when an abnormal disproportion of sanguine liquefaction is reached, incompatible with physiological movement of the vasomotor and psychomotor centers in their normal condition. It becomes impossible for a due amount of nutriment and sustaining pabulum to be appropriated from the blood thus increased in consistency and decreased in fluidity. The non-striated muscles of the arterioles, unsupported and unnourished, take on an abnormal irritability, and contract in spasm. The psychomotor centers, thus rendered anæmic, show their distress in convulsions. A psychomotor center convulsed is an oppressed center of motion struggling for its normal equilibrium. The cause of its tumultuous effort is the robbery of its normal support and nutrition, either through decrease of blood quality or quantity, which may result from under-pressure, over-pressure, or toxic states.—The Medical Standard.

Sulphur Externally in Sciatic Neuralgia.—A novel method suggested by Dr. Henry Gneneau De Mussy, and used with remarkable success, is recorded in the *Therapeutic Gazette*. It consists simply in laying the affected limb or part in a bed of the flowers of sulphur, which was spread upon a cloth. The urine becomes strongly odorous of sulphuretted hydrogen, and the treatment, as a rule, is said to give prompt relief.

In confirmation, Dr. De Mussy records the case of a certain ambassador's valet who was seized with a most

violent attack of neuralgia. On the following day the ambassador was to leave the city on a long journey, and was in great distress for fear that his servant could not accompany him. Dr. De Mussy prescribed the external application of flowers of sulphur. On the following morning the recovery was complete, and the servant was able to undertake the journey, to the great satisfaction of his master.

Dr. L. Duchesne has recently adopted this treatment

with marked success.

In the Journal de Medicine he makes note of the fol-

lowing case:

A lady, aged about forty-eight, and of good constitution, had been for some time past a most horrible sufferer from frequent and violent attacks of sciatica. She had tried innumerable remedies without finding any lasting relief.

Dr. Duchesne at once made an application of the flowers of sulphur to the affected parts. The limb was imbedded in the drug and covered with a cloth. In the morning, much to the patient's satisfaction, the neuralgia had entirely disappeared. Several years have elapsed, but there has never been a sign of the neuralgia's returning.

REST IN NERVOUS AFFECTIONS.—Nervous affections afford many instances in which rest and exercise will call for very discriminating regulation. When the practitioner gets a case of brain-worry and brain-fag from overwork or undue excitement, he is apt, as a mere matter of routine, to order the patient off to the seaside or to the mountains, and to tell him to take complete rest, and dawdle away his time as best he may. This plan sometimes succeeds, but the cases are not rare in which it fails utterly. The busy brain sometimes refuses to rest, and, the usual channels of activity being closed, its energies flow out in novel and abnormal directions. Illtemper, insomnia, ennui, appear perhaps for the first time, and the treatment by rest is a complete failure. In such cases the indication is not abstinence from work but a change of mental occupation, which may be attained by travel, by sedulous cultivation of some hobby, or perhaps by serious intellectual labor in some unaccustomed groove.

We are far from seeking to disparage the immense advantage of rest when wisely regulated and duly limited. But "rest in the recumbent position" is not the essence of all surgery, nor are a warm bed and a quiet

room the sum and substance of the last will and testament of a moribund science of medicine.—Brit. Med. Jour.

NEURALGIA, CHLOROFORM AND THE CONSTANT CURRENT. -Marvelous results are claimed by Professor Adam-kiewics (Progrès Médical) from the combined action of chloroform and the constant current in facial and other forms of neuralgia. The electrode is made of hollow charcoal into which the chloroform is introduced and from which the current sends it into the tissues. That this power of penetration may be thus obtained is thought to be shown in the fact that when chloroform is colored with gentian violet and applied in the manner described to the ear of a rabbit, the tissue becomes dyed. In experiments with the human subject, the writer notes at the commencement the triple action of the constant current, the chloroform, and a condition of cataphoresis followed by a burning sensation and finally anæsthesia. Several remarkable cases of cure are cited. Anæsthesia is not obtained when the nerves are deep seated, nor in sciatica.-Medical and Surgical Reporter, Feb. 18, 1888.—Journal of Nervous and Mental Diseases.

LOOMIS' GOUT PILL.-

R Ext. colchici acetici,
Extract aloë,
Pulv. ipecac.,
Hydrarg. chlor. mit. āā gr.
Ext. nucis vom. . . . gr. ½ ad ½
M. Sig.—Ft. pil. No. 1. To be taken every
four hours, until it purges.

This excellent combination, so near to one habitually used by us in gout and rheumatic gout, we find in the *Philadelphia Medical News*, with appropriate comments as to the value of the acetated extract over other preparations of colcicum.

PSYCHIATRY.

Insistent or Fixed Ideas.—Dr. E. Cowles (American Journal of Psychology, February, 1888), says concerning imperative conceptions that: "The kindred nature of the great variety of these affections is well indicated by the broad designation of "insistent ideas." These aberrations from the normal of well-balanced ideation and feeling, being

once initiated, may develop graver forms in cases of the more positively degenerative type, because of paranoiac heredity or acquired defect,-in other words, when there is hereditary or acquired nervous and mental instability; and such cases may more or less quickly develop primary delusional insanity. The commonness of these affections in their milder forms as simply insistent ideas, and their outgrowth from the ordinary and natural operations of the mind, is a matter of great interest. The commonest superstitions, and idiosyncrasies of formulations of ideas and feelings, which control conduct and enforce habitudes, are of this order in their slight departures from sound reasoning. There may be many degrees of these affections before they are recognized as positive disorders. This view of their common origin can best be illustrated by a series of cases in which the early phenomena are more nearly within the range of observation. It is hardly necessary to search the mysteries of "the inconscient" for the genesis of phenomena which admit a simpler explanation. Many of these affections are to be easily understood as simply accidents or idiosyncrasies of ideation, arising from an incongruous association of ideas, happening according to the common law of contiguity, and becoming fixed in proportion to the intensity of the impressions and by the laws of habit. This may happen in a healthy brain by a mental shock or by a slower process. The origin of these affections is distinctly ideational, but they well illustrate the inseparable nature of thought and feeling, especially when their genesis is favored by disordered states of feeling. The laws of habit play a most important part in the fixation of such ideas, and much is here to be learned of the nature of the great influence of habit in all forms of insanity. These affections, through the possibility of their comparative isolation, permit the study of the formation of delusions. Again, the rôle of the attention is a leading one in these mental phenomena; the attention is commanded in proportion to the insistence of the ideas. In extreme cases of this kind of limitation of the attention there is, side by side with it, more or less activity of consciousness. But it is in this direction that these mental states merge with those described as characteristic of the hypnotic state in its varying degrees of unconsciousness, and of the "limited attention" peculiar to that state. That condition characterized by Professor Stanley Hall's phrase, "tonic cramp of the attention," is

most strikingly shown in these affections. The law of suggestion of ideas is active, and even by auto-suggestion the mental attitudes are induced so analogous to physical "cramp." Also the relation of these attitudes to physical reactions is striking. "A diffusive action in the nervous system accompanies all emotion;" for example, a common sequence is fixed idea, fear, pallor, and heart disturbance, etc. It seems in many cases as if the "path" between the ideation and the sympathetic nerve became so open and direct that there is the changed sequence of fixed idea, heart-quake, and last the conscious fear. events this last is swiftly overtaken by the automatic organic attitude of fear; and this quick reflex from the idea undoubtedly increases the fear; the man is frightened by his own trembling; he is "a coward upon instinct." This amounts to mental suggestion from the physical field. just as the hypnotized are put into bodily attitudes which suggest hallucinations.

MORAL INSANITY .- Dr. J. Wiglesworth (Jour. of Mental Science) is of opinion that the origin of the moral sense may be sought in the social instincts, the pleasure animals display in each other's society being the germ of altruistic feelings. Savages, as a rule, exhibit a low moral sense, although significant exceptions were met with. Militant activities were essentially egoistic in their nature, and it was only in a developed industrial society that any high development of the altruistic faculties was to be looked There was no absolute standard of morality, but actions were to be looked upon as moral or immoral, according to the development which the moral faculty had attained to in any community. The distinction which was made between idiots and imbeciles and ordinary insanity, held in the domain of feeling; so that those who exhibited abnormalities of the moral sense might be divided into those who were congenitally deficient in this faculty, or who from disease, had lost it early in life-the so-called moral idiots and imbeciles; and those who, having once had their full share of moral feelings, had lost them in adult life as the result of disease-forming the class of morally insane persons proper. Moral idiots or imbeciles were children who, with little or no impairment of intellect, showed great deficiency or almost total absence of the moral faculties; and what was of great importance, they were incapable of acquiring them. The ordinary discipline of life produced but little effect on them. Such children usually came of an insane stock. 'On the developmental theory we might find an explanation of such The defect of cerebral organization existing in moral idiots might be considered to be on a level with the normal organization of certain low races of savages; and hence a moral idiot might be considered to be a reversion to a lower type of animal structure—to a lower level of evolution. Morally insane persons proper exhibited a change in their affective nature, their altruistic feelings becoming greatly impaired or altogether lost. Moral insanity might exist by itself, but it was more usually a stage in the development of intellectual insanity. Thus at the commencement of an attack of mania, moral change might show itself for some time before intellectual change became apparent, and it might remain after the disorder of intellect had passed away. Similarly at the onset of general paralysis of the insane, moral depravity might occur some time before any mental derangement showed itself. So also with senile dementia. Epileptics also at times when their fits were troubling them often showed great change in their moral nature, which might be quite temporary. Again, as the result of a blow upon the head, a total change might be produced in the affective side of a man's nature, such cases left no room for doubt that morality was a function of organization. These abnormalities all found their explanation in the developmental hypothesis. The very delicate adjustments of the human organism to its social environment, which make up what is called the moral sense of the individual, were of apparently recent acquirement; and this being so they were peculiarly obnoxious to disease or decay, being affected before the older and more firmly organized faculties. Hence the moral faculties were often the first to be affected when the cerebrum was the subject of slowly progressing disease.

JACK THE RIPPER.—The Society of Medical Jurisprudence discussed the Whitechapel murders December 14th. Lawyer Austin Abbott read a paper which set forth that there are barbarous instincts in man preserved with remarkable persistence by the laws of heredity from uncivilized ancestry.

"The crimes show," said Mr. Abbott, "a hand accustomed to rapid work, to expert celerity. Now, these

qualities imply a considerable mental development on the The chief source of error in the part of the murderer. investigation of lunacy is the tendency of medical experts to infer disease from the nature of the crime itself. Whitechapel murderer has not been caught, and his condition cannot, therefore, be diagnosed. While admitting the possibility of insanity, it is well to consider the influence of heredity upon men or the persistence of the barbarous disposition. The survival in civilized life of savage These slaughters are traits is not entirely outgrown. wholly within the lines of the habitual conduct of barbarous ancestors, indulged for the pleasurable sensations of witnessing human torture. As we view the persistence or survival of the laws of bloodshed and mutilation, the Whitechapel murderer may appear to be not very far removed from that exhibition in history."

Dr. Spitzka gave instances of horrible crimes of the Whitechapel variety, some of them committed by the Roman Emperors, some in the present century. In all of them he observed one element plainly marked-sexual Medical authority, he said, had not been accustomed to regard men like Jack the Ripper, insane. He recalled the strange Texas murders of two years ago, and suggested that the mysterious Texan and Jack are one and the same. He may begin his operations in some other city before long, he declared. The nine London crimes are certainly not his first. They show too much good practice. This barbarous element is present in greater or less degree in every one of us. It is well known that criminals frequently haunt the places where their deeds are discussed; so it is entirely within the bounds of possibility that the Whitechapel murderer is now present in

this room.

Dr. Irwin, who was in London when some of the murders occurred, declared his belief that as civilization advanced, and men found that simple, painless killing, was an insufficient punishment for murder, there would be a return to the old idea of inflicting some measure of torture.

INEBRIATE ASYLUMS AND THEIR WORK.—Asylums and hospitals for the treatment and cure of inebriates are only modern applications of truths asserted centuries ago. Ulpian, the Roman jurist in the second century of the Christian era, urged the necessity of treating inebriates

as sick and diseased, in special surroundings, with special means. Other authorities endorsed these views, and asserted that the State should recognize the veritable madness of drunkards and treat them as such.

In 1747 Condillac, of France, wrote that the State should provide special hospitals for drink maniacs, and urged a change of law and public sentiment to this end. Dr. Rush of Philadelphia in 1790, Dr. Cabanis of Paris in 1802, Prof. Platner of Leipsic in 1809, Salvator of Moscow in 1817, Esquirol of France in 1818, Buhl Cramner of Berlin in 1822, all urged the need of physical restraint and treatment of the inebriate as sick and diseased, in places especially provided for this class. In 1830 the Connecticut Medical Society appointed a committee to report on the need of an asylum for the medical treatment of inebriates. In 1833 Dr. Woodward, of the Worcester Insane Asylum, in Massachusetts, urged that inebriety be recognized as a disease, and special hospitals be provided for its treatment. In 1844 the English lunacy commission urged that inebriates be regarded as insane, and sent to asylums for special treatment. These are only a few of more prominent references to inebriate asylums, although many other writers urged the same views in different ways. The mention of the disease of inebriety roused a bitter opposition, and the question of asylums was put aside until the former could be settled. -By T. D. Crothers, M. D.

MEDICO-LEGAL PSYCHIATRY.

The Medico-Legal Society and Electricity as a Mode of Capital Punishment.—After the re-election of Clark Bell, Esq., the Society at its last annual meeting, December 14th, took up the consideration of the "Best Method of Executing the Law Punishing Criminals in Capital Cases by Electricity." The committee reported that it had experimented upon twenty-four dogs, a horse and two calves, using for these purposes, at different times, both the continuous and the alternating currents, and it was found that with the alternating current, as low as 160 volts would suffice to kill a dog, and that with the continuous current, a much higher voltage was necessary to produce a fatal effect.

Death by the alternative current was without a struggle, while with the continuous current, it was painful and accompanied by howling and struggling. committee expressed the conviction that all hitherto suggested means were open to objection, as either involving burns and lacerations or unnecessarily obtrusive and suggestive machinery. They find serious objection to an apparatus in which the prisoner has to take a standing position, and recommend the recumbent position, in a chair especially constructed for the purpose. It prefers In this chair the condemned should be the latter. securely strapped. One electrode should be so inserted into the back of the chair that it would impinge upon the spine between the shoulders. The head should be secured by means of a sort of helmet fastened to the back of the chair, and to this helmet the other pole, or electrode, should be so joined as to press firmly with its end upon the top of the head. The electrodes should be of metal, from one to four inches in diameter, and covered with thick layers of sponge or chamois skin. The poles and the skin and hair at the points of contact should be thoroughly wet with a warm aqueous solution of common salt.

A dynamo capable of generating an electro-motive force of at least 3000 volts should be employed, and a current with a potential of from 1000 to 1500 volts and with alternations of not fewer than 300 per second. Such a current allowed to pass for from fifteen to thirty seconds would insure death. After extended consideration the recommendations of the committee were unanimously adopted.

STATE PSYCHIATRY.

REPORT OF THE SUPERINTENDENT OF THE CENTRAL ILLINOIS INSANE HOSPITAL.—The twenty-first biennial report of the Illinois Central Hospital for the Insane, at Jacksonville. It covers twenty-one months, from October 1st, 1886, to June 30th, 1888.

The Trustees' report represents the institution as being

in a better condition than ever before.

The Superintendent's report shows, that at the close of the last biennial period, September 30th, 1886, there were 926 patients in this hospital, of whom 459 were men, and 467 women. Since then, up to July 1st, 1888,

there have been admitted 475. Of these 260 were men, and 215 women. The whole number treated since September 30th, 1886, is 1401; discharged recovered, 128, of whom 76 were men, and 52 women; discharged improved, 220—111 men and 109 women; discharged unimproved, 26—11 men and 15 women; escaped, 6 men; died 98—51 men and 47 women; total discharged and died, 478—255 men and 223 women; patients remaining June 30th, 1888, 923—464 men and 459 women; daily average, 907; highest number, 936; lowest number, 890. Forty-five more men than women have been admitted, and 32 more men than women have been discharged.

The per cent. of deaths of those admitted during the period is, for men, 4.42; women, 3.80; on all under treatment, men, 3.64; women, 3.36; on daily average number present, men, 5.62; women, 5.18. There was no epidemic in the institution and not a single suicide.

In regard to recoveries, it appears that of all those discharged recovered, 74 per cent. had been deranged three months or less; 16 per cent., three months to a year, while only 9 per cent. of those who were deranged over a year were cured. This shows the necessity of early treatment. The Superintendent strongly urges provision for the separate care of mittimus cases, convicts and homicidal and dangerous patients.

In the current expenses it is shown that the cost per capita for maintenance and care per annum in 1887 was

\$163.02, and for nine months of 1888, \$126.75.

The appropriations that will be asked of the next Legislature are as follows: For current expenses per annum, \$140,000; for repairs and improvements per annum, \$7,000; for improvement of grounds per annum, \$1,000; for stable and carriage house, \$7,000; for storehouse, \$3,500; for one steam engine, \$1,600; for water pipe and fire plugs, \$2,400; for purchase of burying ground, \$2,000; for electric-light plant, \$12,000.

EDITORIAL.

[The Editor is Responsible for all Unsigned Editorial Matter.]

The "Crank" or Criminal of Whitechapel.— Within a short distance of the London Hospital have recently occurred a series of the most fiendish human butcheries recorded in history; murders quite sufficiently similar in character and in apparent purpose to suggest the suspicion that one and the same lunatic or fiend incarnate had done each devilish deed.

The victims have all been degraded women of the lowest class in the lowest quarter of low life in London, and they have all been horribly and quite similarly mutilated, especially as regards the removal of the uterus and

appendages.

Only an insane fiend or sane devil could have done the ghastly deeds chronicled in Whitechapel during the past two months. Dr. L. S. Forbes Winslow has expressed the opinion that the perpetrator is insane because of the atrocious character of the deeds and the manner in which the victims were left.

No clue has yet been found to the murderer.

The last horrible crime, the eighth in the ghastly series of Whitechapel murders, is thus detailed in the public press:

Dr. Gabe, of Mecklenburg square, a medical official fresh from the horrible sight in the squalid apartment immediately off the wretched court, and which had for furniture an oil stove, two rickety chairs and a squalid bedstead, at the head of which was a piece of looking-glass, such as one buys in Petticoat Lane for a halfpenny, said in all his experience in

dissecting-rooms he never had seen such ghastliness.

The corpse was found nearly naked, on a blood-engorged woolen mattress. The victim's hair was flung upward on a pillow and matted with gore. The fingers, nose and ears were sliced away. The throat was cut from left to right. Below the neck was the appearance such as the careass of a sheep presents in an abattoir, with the ribs and back-bone exposed and cleared of the stomach, entrails, heart and liver. These organs were placed carefully beside the mutilated trunk, after the fashion in a butcher shop. As on previous occasions the uterus and ovarian adjuncts were missing. The flesh on each side of a cut on the median line was carefully folded an inch or two away from the cut. From the hips to the ankles the

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thesh was shredded more or less. It must have been the work of perhaps a full half-hour, said the physician. Both her breasts, too, had been cut clean away and placed by the side of her liver and other organs on the table.

The last victim was heard as late as one o'clock in the

morning, singing "Sweet Violets."

Dr. Winslow's theory that one man, and he a maniac, has committed all the murders, is quite plausible; but as to the insane man being periodically homicidal with intervals of lucidity and obliviousness, he may be at fault. The murderer may have been one of those erotomaniacs of which history has given us some account, who ravish, then murder and mutilate, and drink the blood of their victims.

The last victim, alone in the morning, had been heard by a fellow-lodger croning a drunken song, perhaps to the murderer, says the account. Yes! perhaps, and probably, to her murderer! Her door was locked.

Apparently the murderer, sly to the last, or with a method in his madness, had taken the key; but there was a side window with a pane broken in a quarrel she had a week ago with a man with whom she had been living, but who then parted from her, only to reappear this morning to tell simply of her past and remain unsuspected. Through this little window the accidental visitant looked. His faintness, his escape, and his story of the woman's history, were accepted, and he was permitted to go his way unmolested.

Apropos of the above we quote the following possible explanation from the Journal American Medical Association:

THE WHITECHAPEL MURDERS .- Dr. Bloch, a member of the Austrian Reichsrath, has called attention to certain facts which may throw a new light on the Whitechapel murders. In various German criminal codes of the seventeenth and eighteenth centuries. also in statutes of more recent date punishments are prescribed for the mutilation of female corpses, with the object of making from the extracted organs the so-called "diebslichter" or "schlafslichter"-" thieves' candles" or "soporific candles." According to an old superstition, the light from such candles will throw those upon whom it falls into the deepest slumbers, and they may, consequently, be useful to thieves. At the trial of a notorious German robber in 1810, it was discovered that a regular manufactory had been established by gangs of thieves for the production of such candles. That this superstition has survived among German thieves to the present day was proved by a case tried at Biala, in Galicia, as recently as 1875. In this the body of a woman had been mutilated in precisely the same way as were the Whitechapel victims.

And still more apropos of the above we quote from some recent very pertinent remarks made before the Chicago Medical Society by Dr. J. G. Kiernan:

Some two hundred years ago, in the reign of Louis XIV., lived an old soldier, who had served his turn in the French army with eclat and had borne a high reputation. This old soldier retired with credit towards the age of sixty-seven. Rumors began to pass through France that murders of great variety were being committed in the vicinity of his chateau. These rumors increased and pointed to him, he was arrested, made a full confession, admitted that he committed the murders and assigned to them a peculiar origin. This man was a lunatic of the sexually perverted type in whom the cannibalistic instinct had sprung to the surface. He murdered two hundred children, mutilated them in various fashions. He was adjudged guilty and burned.

Such crimes by such lunatics have come to the surface from time to time. About five years ago there appeared in Westphalia a similar person, who killed a number of servant girls, removed the ovaries and uteriand ate them. London is once more being visited by such an individual. The interest of these cases turns on the fact that they tend to demonstrate the theory advanced by Dr. Clevenger in 1881, that the sexual appetite and hunger were originally one and the same. With its zoological basis I have very little to do at present, but it is a very singular fact that whenever we find certain cases of sexual perversion coming to the surface we find some abnormality of this kind. It must be admitted, however, that the same abnormalities are found in the *roue* who has become satiated by debauch.

Sir James Crichton Browne on Responsibility in Disease.—We cordially concur in the editorial estimate of the Lancet that the "classical and practical lecture" of this distinguished medical gentleman, which appeared in the columns of our London contemporary July 28th and August 4th, "cannot fail to attract attention and excite discussion on the question of criminal responsibility, by members of the legal and medical professions, as well as by the educated public at large."

The subject has already attracted the attention on this side, of physicians, lawyers and jurists, though not yet so generally as we hope yet to see it occupy public and

professional thought.

A late decision of one of our courts that moral insanity is really a mental disease and not a phase of immorality, as so many ignorantly and erroneously hold, and the later very studious, thorough and thoughtful address of Mr. Clark Bell, of New York, on the legal definition of insanity, are encouraging evidences that both the bench

and the bar will soon be *en rapport* with the hospital on questions of disease affecting responsibility to law. The time is near at hand when the impress of the teachings of Prichard and Ray will appear in the rulings of our courts, when we in our own day shall have the satisfaction of seeing it demonstrated in liberties and rights guarded and protected by law which are now without a legal protection—that they and their *confrères* and disciples in psychiatry have labored not in vain for the welfare of the mentally alienated.

We quote, with hearty approval, the following not uncommon fact of observation among alienists, though not always conceded by the profession at large, who often take the side of the laity when questions of obscure

mental diseases are under judicial inquiry:

There are some prisoners and convicts concerning whose insanity no doubt can arise, even in the mind of the laity; but there are others whose crimes, although apparently—that is, to the ordinary observer committed whilst in full possession of will-power, are yet traceable by the expert to diminution of voluntary control. It happily these latter escape with their lives, to be "detained during Her Majesty's pleasure," it is obvious that a complete record of their acts and demeanor during their incarceration should not only be preserved, but published, in confirmation of the grounds upon which they were sent to enforced confinement instead of to the gallows. If this were done, there would be less disposition than there is at present to besitate to accept the opinion of expert medical witnesses upon the relationship of insanity to crime. Whilst, however, the recorded history of so-called criminal lunatics ends with their public career, there will necessarily be a great tendency to regard with distrust the plea of irresponsibility set up in answer to a charge of willful murder.

The Lancet further says:

Perhaps the most cogent remarks in Sir J. Crichton Browne's lecture were those in which he attacked and demolished the tenets held by Lord Bramwell upon the most fitting jury—lay or medical—to decide upon a man's insanity. As is well known, his Lordship holds the opinion that "common sense" is sufficient to determine the question at issue, and that there is no necessity for special expert knowledge. Nor is Lord Bramwell singular in this opinion, for not long since we had occasion to contest the "common sense" ruling of one of our judges, "that the question of a prisoner's insanity was one for the jury, and not for the medical witness."

The "common sense" criterion of mental aberration is simply nonsense. Common sense, unenlightened and unswayed by scientific observation and deduction, has

successively ignored and controverted all the observations and conclusions of science, from the theory and discoveries of Copernicus, Galileo, Columbus and Newton, to those of Galen, Harvey, Jenner and Koch, until men of uncommon sense and rare powers of observation numerous enough have come forward and confirmed the uncommon idea and secured for it respectful consideration. Preconceptions are dislodged slowly from the human mind. Habits of thought that have become automatic and formularies of precedent, that have become habitual to either legal or medical authority, are grudgingly abandoned.

The right and wrong test of insanity is one of these automatic precedents of the bench and bar. without appreciable and definable delusion is another to which the medical profession adhered, and the doctrine of satanic possession with reference to the nature of insanity long dominated the clerical mind and even some medical and legal minds. But obscession and witchcraft and the right and wrong test, have had their day. The bright light of psychiatric science steadily shining on the dark places in the psychiatry of human conduct gives an uncommon illumination of the subject so that even the "common sense" discernment of the ordinary jurist is beginning to "see by sight of science," as we know in day-time there are stars above us by the "same token," though common sense, unenlightened to the degree of uncommon expert observation, would never believe it, but deny it, as the same common sense asserted, and sometimes still maintains, that the "sun do move," the great Galileo notwithstanding. Common sense in court on questions of science, unless guided by science, is about as reliable as a petit jury that does as it pleases with the instructions of the court.

The Rationale of the Outside Work Done by Our Asylum Superintendents.—Medical superintendents of hospitals for the insane perform peculiar functions. They are physicians to minister to both mind and body; they must have a full reserve of psychical power for many sudden emergencies with their patients; they must keep in constant trim mentally and physically; they must have power, for with them to be weak in mental resource and buoyancy is not only to be themselves miserable, but it is to spread misery among their patients. To gain and keep the essential power of organism for their peculiar

work they must have recreation and suitable rest. They are generally strained in mental resources to their fullest

capacity if not often overborne.

They have little opportunity for social life outside their respective institutions; hence they must secure recuperation in some other way and what way is more rational or congenial to the physician who rightly esteems the welfare of his patients, than by directing the operations, under suitable subordinate officers of the house and its environments, that contribute to the patients' comfort and restoration.

One of the chief acts of the successful alienist in charge of a hospital for the insane is to interest his patients in their environment for diversion and to make their environment interesting. To do this best the medical officer should know something of the house he and his patients live in and their surroundings, and have a supervisory management over all. He should have the right to go where and when he deems advisable for the welfare of his patients, over farm, garden, dairy; and to judiciously allow patients to become interested in them. To do this aright he should himself have an active and a lively directing interest in all of these affairs, subject, of course, to suitable regulations for expediting and systematizing work.

Dr. John Curwen, in replying to the cavil of an outside physician, so pertinently puts the necessity for outside work on the part of the medical superintendent as to leave little room or need for further defense of the oft-assailed

asylum superintendents on this score:

The greater part of supplies is procured by contracts which are let by the trustees, and the other details of purchases are made by the steward, and the details of the work on the farm are attended to by the steward and the farmer.

All the duties required of the superintendent in these respects do not occupy, on an average, two hours in the day; and anyone who will say that that amount of diversion of mind from the strain of medical work in a large hospital is too much, has yet to learn the first principles

of mental hygiene.

The superintendent of a large hospital for the insane, who will conscientiously perform his duties in directing the medical, moral and hygenic treatment of his patients, has no time to give to social duties calling him away from the hospital, and he must have some variation in the work he is called to perform, or he will soon lose the ability to perform those medical duties in such a manner as to give satisfaction to the large class in the community who demand that he shall do all that science and art can suggest for those placed under his charge.

Anyone who has practically experienced for any considerable time the psychical strain that falls daily upon the medical superintendent who daily visits several hundred insane persons, playing the agreeable and practicing the social amenities with all, saluting each by name, offering his hand and listening with patience (real or assumed) to the manifold requests, complaints, etc., wise and otherwise; constantly planning (as is the medical officer's duty) to please without practicing falsehood and to turn violence. discontent and melancholy into better mental moods, would grudge or deny the good alienist physician the diversion from this daily strain so much needed and justified on principles of physiological psychology—a diversion as well secured by outside superintendence as by any other method and yet serving second to another use in the real welfare of the patients. The farm, the garden, the dairy, the workshop, etc, are valuable appurtenances to the well-regulated asylum; and to exercise an oversight over them, and even over the stable and the pigstyes and poultry yard, with suitable employes to have the direct care of them, is a diversion for the overstrained superintendent if his tastes lead him in these directions for rest, as well as to the patients, whom they interest as they may have done at their homes.

Brain Development in Extinct Animals.—Scientific men no longer consider evolution as a theory, but they regard it as a law alike applicable to all orders of phenomena. Before this doctrine had shown how nature has worked out the miracle of life, men of science were confused by the great mass of unsystematized and apparently unrelated materials that their labors had accumulated. When, however, evolution disclosed the orderly succession of events that have prevailed throughout all time, and the relationship that exists between all things that live, and all things that have lived, a new and larger meaning was given to the facts of nature, and fresh impetus to investigation.

If previous to the acceptance of the development theory someone had observed in a series of extinct animals, evidences that as one form had replaced another, there had been an increase in the size of the brain, and in the complexity of its organization, he doubtless would have dismissed it as a matter of no significance. Under the new conception, however, the seemingly unassociated

phenomena, over which men stumbled and wondered, and vaguely speculated, are seen to be linked together by a beautiful order, showing not only the kinship of the past and present, and that the later and newer complex is a product of the older and simpler, but revealing also the various steps of the long and tedious progression. Some recent investigations into extinct animals' forms, illustrate the advantage of thus observing things. Prof. O. C. Marsh, of Yale, who is famous for his discoveries of extinct animals in the Rocky Mountain region, has written for the Fifth Annual Report of the U. S. Geological Survey, an account of his investigations, in regard to the nervous system of extinct, as compared with living animals. These animal remains are found chiefly in the Green River basin, and are imbedded in clays and sandstones, from one hundred to a thousand feet thick, in what were once large, fresh water lakes. The animals described, he calls by the name of Dinocerata. They were the largest animals of the period, belong to the ungulates, and were probably among the ancestors of the modern ox. The three genera described occurred in the tertiary period.

The following is a condensed statement of the facts

contained in the article of Prof. Marsh:

"The brain of the Dinocerata is especially remarkable for its diminutive size. It was proportionately smaller than in any other known mammal, recent or fossil, and even less than in some reptiles. It was indeed the most reptilian brain in any known mammal. In one species the brain was so diminutive, that it could have been drawn through the neural canal of all the presacral vertebræ. A further examination showed that not only these animals, but all mammals of the tertiary period had very small brains, many of them being of the low reptilian type. As the comparison was extended to include the animals from the higher divisions of this period, the same fact was apparent, and in extending the investigation to more recent times, there was found an increase in size and complexity of the brain. In bringing into the investigation the mammals of the present time, the improvement in brain-power was still 'more apparent, and the outline of a general law of brain growth was soon determined.

"In tracing thus the groups of mammals from tertiary to the present time, it was found the brain growth was constant and followed the same general law. The results of this investigation were embodied by the writer in a general law of brain growth in the extinct mammals throughout tertiary times. This law briefly stated, is as follows: 1st. All tertiary mammals had small brains. 2d. There was a gradual increase in the size of the brain during this period. 3d. This increase was confined mainly to the cerebral hemispheres, or higher portions of the brain. 4th. In some groups the convolutions of the brain have gradually become more complex. 5th. In some the cerebellum and olfactory lobes have been diminished in size. 6th. There is evidence that the same general law of brain growth holds good for birds and reptiles from the cretaceous to the present time. The writer has since continued this line of investigation, and has ascertained that the same general law of brain growth is true for birds and reptiles from the jurassic to the present time. To this general law of brain growth two additions may now be made, which, briefly stated, are as follows: 1st. The brain of a mammal, belonging to a vigorous race, fitted for a long survival, is larger than the average brain of that period in the same group. 2d. The brain of a mammal of a declining race is smaller than the average of its contemporaries of the same group, accompanying Prof. Marsh's article, on a series of figures showing the comparative size of the brain in a number of mammals, recent and extinct. These show clearly that there has been, from the early tertiary time to the present a gradual increase in size of brain, and in the complexity of its organization."

There is little doubt that further investigations will show that this law applies to all life, in all geological periods, and we may yet read in these buried records the history of the growth of the highest brain out of the lowest.

J. H. M.

Myxedema.—Two valuable contributions to the study of this disease have recently been made, and quite indepently of each other—one by a committee appointed by Dr. W. M. Ord, representing the Clinical Society of London, and the other by Dr. Henry Hun, of Albany. Dr. Hun gave the results of his investigations in a paper published in the American Journal of the Medical Sciences for July and August, 1888, reporting therein four cases of his own, and analyzing 150 cases reported by others.

The Buffalo Medical Journal has analyzed this work

and gives the following results of its examination:

Grouping the conclusions of these statistics together, it appears that myxedema is practically the same disease as that named "sporadic cretinism;" is "probably identical with cachexia strumipriva;" and bears a close affinity to "endemic cretinism."

Clinical and pathological observations indicate that destructive change, either by removal or disease of the thyroid gland, is the one condition common to all cases. The most common form of destructive change of the thyroid consists "in the substitution of a delicate fibrous tissue for the proper glandular structure," a nearly complete atrophy of the parenchyma of the gland, and in some cases, at least, a new formation of lymphatic tissue in it. Other lesions, which are more or less common, are a general obliterating endarteritis, with consequent hypertrophy of the left side of the heart, a chronic diffuse nephritis, an interstitial hepatitis, degneration of the suprarenal capsules, atrophy of the fat, and a general edema or infiltration of the skin and mucous membranes.

Patients of all ages may be affected with the disease, but it is most frequently found between the ages of thirty-five and forty years. It is more common in females than in males, and excessive child-bearing, exhaustive hemorrhages, mental shock, worry and injuries, are important etiological factors. It may develop insidiously, or commence with some nervous or cutaneous disease.

The symptoms of myxedema are very characteristic, and affect especially the skin and mucous membranes, and the nervous and vascular systems. Dr. Hun summarises them very clearly as follows: "The skin is swollen without pitting, dry, scaly and cold, the hair and teeth frequently fall out, the nails become brittle, and the perspiration is either greatly diminished or absent. The mucous membranes are also swollen, but their secretion is usually increased. There is mental sluggishness and impairment, and insanity is frequent; sensibility, both special and general, is impaired in about half the cases; the muscles act feebly and sluggishly in all cases; the reflex actions are frequently diminished; speech is slow and in more than half the cases hoarse; and numbness and neuralgic pains are frequently present. In the majority of cases the pulse is slow and small, and the heart presents some abnormality. The blood is often in an anæmic condition, and very frequently there are severe hemorrhages. The temperature, especially the surface temperature, is sub-normal, which may be considered in part a nervous symptom."

The investigations of both the committee and Dr. Hun agree that mucin in the tissues is not in excess, as was believed by those who first made chemical observations on the disease.

Myxedema usually lasts a number of years—sometimes as many as fifteen or twenty. Very few cases fully recover, and most of them die sooner or later, usually from some intercurrent or associated affection. The course of the disease is subject to considerable variations, the swelling of the skin and other symptoms being much worse at certain times than at others.

The enlightenment which the authors have given to the profession in thus presenting the results of their experiments, examinations and researches will, in a measure at least, assist in penetrating the darkness which surrounds the very important function of this gland. We commend these studies to the profession as the most complete and trustworthy of any that have yet appeared, on the symptoms and pathology of this most interesting and peculiar disease.

Psychiatry in Surgery. A Word to the Chirurgeons—The Alienist and Neurologist would be derelict in duty if it should longer withhold a brief word on this subject to the many eminent operators whose names are on its subscription list and whose skill with the knife is known to the world and fully acknowledged by us. The surgeons who read the Alienist and Neurologist are not of that numerous class of kids in capital crime who cut less to cure patients than to carve corpses for the cemetery, but really competent surgeons who consider the probable consequences of every operation to the patient they propose to operate on. It is to such that we speak.

Dr. James G. Kiernan has lately discussed, in new and interesting form, the old condition of *delirium traumaticum nervosum*, and animadverted with much force on the growing tendency to ignore the feelings, fears and sense of

propriety of patients about to be operated on.

There is no doubt but the manner in which a capital operation is first broached to a patient and entered upon by the surgeon, after consent is obtained, has much to do with its success or failure, for the unfortunate patient has a psychical as well as physical nature to be affected by

the operation.

The physical shock is guarded against by the administration of an anæsthetic, but the possibility of psychical shock is not much guarded against by the majority of surgeons, either in the abrupt way ether or chloroform are administered or in the preliminary preparations for the operation in the patient's presence and the unnecessary parade of the surgeon's instruments, sponges, towels and other instrumental appurtenances of the approaching bloody performance, which, though not at all disturbing to the surgeon about to perform the operation, are of awful significance to the individual about to be operated on. Alarm excited in the mind of a patient before a dreadful operation may have something to do with exciting the delirium and struggles that come on with the anæsthetization

and may abide with the patient after the ether and the

surgeon have both done their direct work.

For this reason, if for no other, it would be far better and far more humane to bring the patient gently and with as little previous alarm as possible under chloroform or ether in a room as unexciting and as free from alarming environments as practicable. There is no need for the preliminary display of operating instruments, sponges to staunch hemorrhage, and the white operating apron or anything else which forcibly or alarmingly call to the patient's mind the dangerous procedure of which he is so soon to be the subject. The operating aprons can be put on and the knives, etc., exposed to view at about the time when they are to be needed, as anæsthetic unconsciousness overtakes the patient and he passes into a dream perhaps, which has not been excited by any needless dread-inspiring display about him. Considerations, both humane and psychical, commend the least shocking preliminary procedures about the patient, so soon to be helpless under our violent and bloody instrumentalities of relief, which we would exchange for milder ones if we could in the using. We should, therefore, be as unobtrusive in their preparatory employment as practicable and possible.

The Paraldehyde Habit.—The first case of this kind has come under our observation lately in the person of a maiden lady of forty-two years of age who, through the assistance of her physician, was conducted from the use of morphine and chloral into that of paraldehyde, and he could get her no further. All attempts at abandoning the pernicious habit have been futile. The lady now consumes one ounce or more of the drug daily, and has taken as much as twenty ounces in twelve days. She cannot sleep unless under its influence, and when deprived of its use for a few hours she is languid, restless, miserable, suffering physical pain and mental depression, and she has no appetite.

Unlike morphine deprivation she has no exhausting diarrhea, muscular tremors or "electric pains" when without the paraldehyde, but like all remedies which exercise marked psycho-neural restraint after long-continued use, the patient misses, in a marked and painful manner, the sudden withdrawal of the long-accustomed nerve

impression.

She has somewhat prematurely reached her menopause, and some of her irritability and debility may be due to that; but she is irritable, exhausted and collapsed when the drug is not freely circulating in her blood. We gave her a supporting prescription of hypophosphites, strychnia, arsenic, the ammonium bromide and muriate, with enough syrup and Mariani wine to make a very palatable prescription with chloral at night; but lacking the paraldehyde, it was not agreeable to her, nor were our further services, and we were involuntarily compelled to leave this unfortunate patient to her fate.

An Illustrated Encyclopedic Medical Dictionary of the Technical Terms used by writers on Medicine and the collateral sciences, in the Latin, English, French and German languages, edited by Frank P. Foster, M. D., editor of the New York Medical Journal, with the collaboration of eleven able medical gentlemen of the United States, is on our table. D. Appleton & Co., I, 3 and 5 Bond Street,

are the publishers.

This valuable book is exhaustively planned and elaborately executed. The volume before us contains 782 pages, and extends from A to C. The paper, binding and presswork are all that could be desired; and for this really excellent work to the profession, the editors and the publishers have our hearty congratulation and commendation. The book is thorough and complete so far as Dr. Foster and his learned collaborators have gone. They have laid the foundation of an enduring literary monument, and unwittingly but most truthfully inscribed upon it arakos, for it truly is not a bad work but, on the contrary, the best of its kind which has ever been accomplished in this or any country.

Critical search has failed to find any technical medical term of value, belonging to the letters included in the vol-

ume before us, omitted.

The book is in every respect creditable to the industry, professional devotion and philological and scientific attainments of its accomplished and painstaking editors, and will prove to Medicine what Webster or Worcester have proven to general English literature, invaluable and indispensable.

Neurosal and Reflex Disorders of the Heart.— The profession has long been generally familiar with the significant part that reflex irritation plays in the production of real as well as simulated organic disease. well known pain in the knee referable to disease of the hip-joint, and in the shoulder referable to hepatic disease; the pain of the meatus urinarius connected with the cystic irritation of inflammation or stone; the gastric cephalalgias, hepatic coughs, emotional dyspepsias, genital and ovarian reflexes, hysterical paralyses and stomachic vertigoes are quite well known and generally recognized as facts of every day clinical observation as well as many of the reflex neurosal disorders of the heart. Gangliopathy, too, and the abdominal visceral neuroses have come to be better understood than formerly, especially since the writings of Drs. Edward John Tilt and Clifford Albutt, but nowhere in the records of practical clinical medicine have the neurosal and reflex disorders of the heart been placed in so clear and satisfactory a light as in the West London Hospital Report, the concluding one of which we abridge for this issue of the ALIENIST AND NEUROLOGIST and place, in memoriam, under the name of the lately deceased author.

Have we an Undescribed Disease to Treat?—At a recent meeting of the Jackson County (Mo.) Medical Society, Dr. Lanphear read a paper of above title, from which we extract the following:

Have we an Undescribed Disease to Treat? This disease prevails in certain localities of Kansas City, and has been called typhoid, typho-malarial, continued malarial, or cerebro-spinal. He saw several cases in one locality in the summer of 1887. The disease in these cases was ushered in with a severe chill, the only one. Temperature rose to 104° or 105° F. There was constant headache till near the end of the disease; tongue moist and clean. There was considerable vomiting, with little nausea. It seemed to be cerebral in origin. Slight jaundice was noticeable. Urine was dark and ammoniacal, with albumen, but no casts. Herpes and purpura was noticeable. Pain in the muscles of the back and lower extremities, particularly in the gastrochnemius, was a constant symptom in all cases. Motion aggravated the pain. The pulse was not much increased in frequency; the rate was 80 to 90, and soft. There were no abdominal symptoms. The disease seemed to be infectious, and prevailed in summer in these cases.

Post-mortem examination revealed little, except slight inflammation of common bile duct and congestion or inflammation of the kidneys. There were no signs of disease of intestines peculiar to typhoid fever. The gastrochnemius muscle was infiltrated with what appeared to be serum. He thinks the site of irritation is in the ganglionic nervous system, the cerebrospinal system being affected through sympathy only.

His cases could not have been typhoid, having had none of the symptoms. They were also entirely dissimilar to intermittent fever, and the

symptoms could be readily distinguished from material fever. Cerebrospinal fever is the only one with which this disease could possibly be confounded, but the latter is much more grave.

These symptoms are much like those we have described as nervous typhoid, except the contagiousness claimed by Dr. L.

The Nerve Origin of Menstruation.—In our Selection department we transcribe an interesting and suggestive paper on this subject, by Dr. James Oliver, M. B., F. R. S., Edinburgh. It will interest the readers of the ALIENIST AND NEUROLOGIST because many of them have

long thought as the author does, or similarly.

The vasomotor mechanism and its cerebro-spinal connections and physiological relations to the vascular system and to the blood supply of the uterus or brain; its sensitiveness to emotional and other psychical states and to cerebro-spinal shock have long furnished neurologists a much more satisfactory presumptive explanation of this remarkable function in the female, than any other offered by gynecology.

Dr. Oliver, who is a member of the Royal College of Physicians, honorary member of the Farmington General Hospital, and Assistant-Physician to the Hospital for Women, London, proves that menstruation is not a mere shedding of mucous membrane but a phenomenon of nervous origin, and he proves it with the logic of a neurologist

and the incontestable facts of neurophysiology.

There never was any real reason for the gynecological conjecture that the monthly molimen was only a secretion, because there is no necessity for it as a secretion only in the human economy. There is, however, a demand in uterogestation for pure nutrient blood, and that the menstrual function, arrested and diverted at the time of conception, supplies the germinal and feetal developmental conditions (besides the blood supply), being furnished by the seminal vesicle, ovule and sequent vital function of the new union and the new life.

The fact that vigorous women sometimes suffer from cerebral hyperæmia and even from congestive mania, and from congestions of other organs, from the sudden unphysiological menstrual suppression, shows how plainly this flux is dependent on vasomotor states and related to the vasomotor system elsewhere. The discovery of mucous epithelium, etc., in a sanguineous exudation which passes through and

over an extensive mucous surface is no valid proof against this view,

The Opium Habit from McMunn's Elixir and Compound Tincture of Cinchona.—Apropos of the preceding we may as well here as elsewhere mention the fact that such a case has come under our observation during the past sixty days. The gentleman had received a prescription from a physician, of one drachm McMunn's Elixir of opium to three of Huxham's tincture, to be taken three times a day. After using this prescription for several weeks he found it impossible to discontinue it without medical aid. When the medicine was out of him mental confusion and demoralization seized him, diarrhea and the characteristic diaphoresis, malaise and muscular pains would come on, which only a return to the prescription relieved. He was cured by gradual withdrawal and suitable substitutive tonics and electricity. McMunn's elixir is no more harmless an opiate than others with reference to the opium psycho-neurosis as a sequel of its continued employment.

Compliment to Dr. Workman.—The many readers of the ALIENIST AND NEUROLOGIST will read with pleasure the following bit of news from our much esteemed friends and national kindred just over the border:

There was a large attendance of the medical fraternity at the meeting of the Toronto Medical Society last night in the Ontario College of Physicians and Surgeons' building, Bay Street. Dr. Machell occupied the chair, and with a few introductory remarks, introduced Dr. Reeve, who delivered a short speech eulogistic of the past career and work of the first president of the Society, Dr. Workman. He concluded by unveiling a handsome oil painting of Dr. Workman, which will find an honored place in the library of the Society. Dr. Workman was then called upon. He made a short, telling address, in his quaint, humorous way, which highly delighted his colleagues. The regular business of the Society was then proceeded with, and Drs. Hunter and Osler each read papers on "Surgery," which were followed by discussions. At the conclusion of the meeting, coffee was served in the library upstairs.—Exchange.

Sajon's "Annual of the Universal Medical Sciences," the Editorial department of which is at 1632 Chestnut Street, Philadelphia, together with that interesting quarterly, "The Satellite," published in connection with the "Annual," is on our table. We have not had time to critically examine all the volumes, but the volume

we have looked over carefully, namely, Vol. I., devoted mainly to affections of the brain and nervous system generally, is an exceedingly valuable book, worth the price of the whole set to any physician interested in neurological studies (and what physician is not in these days of remarkable advance in all that pertains to diseases of the nervous system. We have looked through all the volumes cursorily and feel quite safe, from the subjects noted in the index and the names of the authors, many of whom are already distinguished in the ranks of Medicine, in commending the whole work.

Honor to Dr. Chapin.—We note with much pleasure, in the Bulletin de la Société de Medécine Mentale de Belgique, just to hand, the election of Dr. John B. Chapin, Physician-in-Chief of the Pennsylvania Hospital for the Insane, at Philadelphia, to honorary membership in this distinguished body of eminent savants. This is an exalted honor worthily bestowed. It will be honorably borne by the recipient.

CORRESPONDENCE.

Letter from Berlin. Flechsig's Psychiatric Polyclinic, etc.

August 20th, 1888.

Editor ALIENIST AND NEUROLOGIST:

The regular summer course of lectures has just closed and, with the exception of a few straggling clinics and special courses, such as Koch's, which continues all the year around, we have entered the glorious summer vacation when everybody, professors and students especially, take their usual summer trip. As far as the heat is concerned they might as well stay at home, for it has been so cool all summer that one could hardly go out without an overcoat. It has been an unusually rainy season, though here in Berlin that matters little, as the asphalt streets are actually scrubbed every day, and the more it rains the cleaner it is.

I have just returned from Leipzig to visit my old stamping grounds and to see the new psychiatric clinic of Prof. Fleehsig, and as your readers are undoubtedly interested in the cause of psychiatric teaching I will give a more extended description of this model establishment.

The idea to establish small psychia ric clinics of at most one hundred and twenty beds in the vicinity of universities originated with the celebrated Griesinger, but was most generally opposed because it was thought impracticable. This clinic at Leipzig was the first built on that plan, and its general success and its imitation in various other university cities, such as Heidelberg, Freiburg, etc., show how its value is appreciated. A student who can spend a year at this clinic and its laboratories, under the guidance of Prof. Flechsig, may be envied for his opportunities. The old Georgien house where the clinics were formerly held and where I often attended them in 1881, is very primitive in comparison.

To my regret Prof. Flechsig was also on his vacation trip, but one of his assistants, Dr. Rasch, very kindly showed me through the new hospital. This Irrenklinik of the university is situated in the part of the town where most all the buildings of the medical part of the university are placed, quite conveniently within fifteen minutes' walk of most of them. It consists of five different buildings:

- 1. The main building or hospital proper, with a projection containing laboratories, auditorium and officers' dwellings.
 - 2. A building for the kitchen, wash-house, etc.
 - 3. A machine and boiler house.
 - 4. An isolated pavilion for infectious diseases.
 - 5. The director's dwelling.

The main building contains seven distinct divisions for each sex, and the patients are classified generally according to their quietness. A division generally contains the following apartments: A corridor or hall, a dwelling-room or parlor, four sleeping-rooms, a dining-room, a wardrobe, bath, wash-kitchen and closet. Such a division is intended for eight patients and two nurses.

The hospital contains besides fifteen cells, one hundred and twenty-five beds for patients and twenty-six beds for attendants, who all sleep in

the wards. The fifteen separate rooms are arranged in groups of not more than three, and are differently constructed according to their purpose; those for the very restless, with warm water heating for the floors, which can always be kept warm. The windows are of the ordinary construction, thick glass being avoided. Some are protected by strong wire screens. They also have artificial ventilation. All single sleeping-rooms have openings for observation. A feature of the institution is a profusion of bath-rooms, besides a large central bath, a perfect hydropathic establishment. Each patient receives at least two baths a week. Surrounding the hospital is quite a large garden enclosed by a high wall, which was necessary on account of the vicinity to the city. In the basement are some working-rooms for men—willow-work, shoe-making and paperhanging. On the female side there is a sewing-room. Patients can also be employed in the routine work of the establishment. There is also a billiard-room and chapel in the building.

On the second floor, in the front, is the auditorium and the scientific laboratory hall for microscopic work, chemical laboratory room for the collection of brains, the office of the director, in which the apparatus for scientific purposes, instruments and models are kept, and the quite exten-

sive library.

In accordance with the principles of modern philosophy all appliances and apparatus necessary for the exploration of the physical basis of psychological phenomena are here provided with a praiseworthy liberality by the royal government. Instruments which record with scientific accuracy the astonishing difference in the quickness of thought between individuals, as for instance, the lightning-like reaction of a Rubenstein to the deliberate action of a Dom Pedro of Brazil, who both have been tested here. The genius of Prof. Ludwig in the physiological laboratory of Leipzig has

helped to devise many of these appliances.

The building of an isolated pavilion for infectious diseases has proven a beneficent feature, though the cost of its maintenance is comparatively great. The limited means have not made it possible to waste much on elegance, though everything that is necessary for hygienic reasons is provided. The entire cost, for ground, building and furnishing, is about \$300,000 and the annual deficit, which the State covers, is about \$15.000. With the exception of fifteen free beds the patients pay a small sum for their keeping, from eight cents to a dollar per day. According to the statutes the purpose of the Irrenklinik is to treat all cases of nervous and mental diseases which are necessary for practical instruction in psychiatry. It is directly under the control of the Minister for Public Instruction, and the Professor of Mental Diseases is the director of the institution and all its servants.

Patients are received on the judgment of the director; hence admissions are much facilitated and the deplorable delay prevented According to a contract with the city of Leipzig the hospital receives all cases sent by the city authorities.

The number of cases treated has constantly increased, until according to the last report, five hundred and twenty-four have been admitted during the year. The number of cures average forty-five per cent.—quite a high

figure compared with other asylums. It is to be taken in consideration, however, that a large number are acute cases, some coming in within a few days after the first symptoms of mental disease. However, chronic and incurable cases are not refused, as appears from the large number of general paralytics, about sixteen and two-thirds per cent. of all admissions. In regard to the treatment there are certain rules practiced here which might be of interest.

In all cases of prostration or bodily exhaustion the treatment in bed, according to the principles laid down by Weir Mitchell, is followed. Next to rest, generous nutrition is aimed at, and therefore the expenses for the kitchen are considerably higher than at the other asylums. As already mentioned, the use of water is freely resorted to. The most distressing symptom of insomnia is combated by all means at hand, including the various hypnotics. Operative treatment is also freely resorted to when indicated.

For many of the above facts I am indebted to a report of Prof. Flechsig, "Die Irrenklinik, 1883," and to the kindness of one of the assistants, Dr. Rasch. There is one scientific assistant and two clinical assistants.

Besides the Charite in Berlin, I have seen the psychiatric clinics in Munich, Vienna and Heidelberg. That of Prof. Ebbinghaus, of Freiburg, is not yet finished. The two latter are planned similar to the one at Leipzig, which though quite recent, has served as a model for the more recent ones.

H. W. HERMANN, M. D.

IN MEMORIAM.

J. MILNER FOTHERGILL.—The death, last June, of this well-known English physician was and will long be felt to be a sad loss to medical literature and progressive Medicine. He died too soon for the best good of the profession, being at the time of his death scarcely forty-seven years old. The cause of his death was diabetes and a complicating gangrene of the foot. He was the son of a physician and a graduate of Edinburgh University in 1865.

Dr. Fothergill was a fertile, vigorous and advanced medical writer, who, in his later years, had so widened his comprehension of medical problems that he gave deserved

place to the neurotic influence in disease.

He first became a cosmopolitan writer and gained world-wide fame in 1872, through his book on "The Heart and Its Diseases," a second edition of which appeared in 1879. He wrote much on dietetic problems.

One of his best books was on hygianic subjects.

But neurologists remember and appreciate the deceased son of Westmoreland by his intelligent appreciation (for a general practitioner) of neuropathic relations to clinical medicine, and will read and re-read with interest the concluding lecture of a series delivered in his life-time, by the distinguished deceased, at the West London Hospital, on "The Neurosal and Reflex Disorders of the Heart," which we reproduce here, in memoriam, of one who, had he been spared a decade longer to the profession, would have been a world-acknowledged master, if a man's work and thought to the present be any promise of future achievement:

"THE NEUROSAL AND REFLEX DISORDERS OF THE HEART," by J. Milner Fothergill.—

When a patient complains directly of his or her heart in the physician's consulting-room usually no disease is present, but merely a neurosal condition. Probably the only exceptions to this rule are those who have previously learnt from some other medical man that they have some mischief about the heart. * * *

The person who really has heart disease makes complaint of some consequence thereof, as dyspnæa on exertion. Frequently valvular disease is detected by the usual physical examination, and the patient is unaware of anything being amiss with him: in such cases the compensatory

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muscular growth is sufficient and is not failing. But when the nervous mechanism of the heart is disturbed then the patient is acutely conscious that something is wrong, and is usually alarmed and filled with dread.

* * The circulation is closely linked with the emotions, not only the heart but the peripheral vessels with their large muscular walls. In joyous emotions we find the peripheral vessels dilated, the extremities warm and the heart beating vigorously. On the other hand, dread and anxiety contract the arterioles, the face is pallid and the hands are chill, the blood tension in the arteries is heightened and the renal secretion is profuse.

* * *

The blush is an emotional disturbance of the peripheral area of the vascular system. * * * It extends over the whole cutaneous area and is not confined to the face and neck though seen there chiefly. * * Palpitation often accompanies the blush, because the dilatation of the arterioles suddenly lowers the blood-pressure in the arteries, and the ventricle having less obstruction to overcome, strike the chest walls violently; the more too that the emotional state probably also affects the cardiac ganglia. Some persons possess a power of voluntary control over these emotional disturbances of their vascular system, which is called coolness. (The practiced rifle shot, the coquette, and the famous Col. Townsend, who could suspend the action of his heart at will, are here instanced,)

Disturbance of the rhythm of the heart is one of the outcomes of cerebral disease, and is of bad prognostie omen. It is found in hydrocephalus, in compression of the brain and in inflammation of the brain (Marshall Hall). "A tall stalwart fellow, of good family history and excellent physique," when asked a question while being examined, which caused him to think a moment, had a distinctly changed rhythm; the action was slowed, and there were intermissions. This experiment was repeated. If the question put involved no thought the heart's action remained unaffected.

Disturbance of the heart's rhythm may also be induced by pressure on the vagus nerve. (The case of the famous Czermak and a case from Romberg are here quoted.)

Of the neurosal maladies of the heart, angina is one. We know little of neurosal angina, except that it is found very commonly in women at the change of life.

* * * It must be discriminated from the true angina pectoris, which is caused by spasm of the peripheral arterioles which raises the blood-pressure in the arteries and so embarrasses the heart.

Transient attacks of this true angina often cause great suffering, but as long as the heart walls are sound there is no great danger; but when the muscular walls are undermined by fatty degeneration, sudden death is a common result. This true angina is most frequently seen in men of gouty history, and is relieved by the administration of potash and an abstinence from albuminoid foods.

Neurosal angina is more influenced by arsenic. * * *

The ordinary neurosal disturbances of the heart are palpitation, irregularity, intermittency—putting them in their order of gravity.

Palpitation "may be neurosal or due to muscular embarrassment."

When blood is experimentally forced into the heart under abnormal pressure more rapid and more powerful ventricular contractions ensue, and that too when the vagi are cut.

When a motor nerve is irritated the blood-vessels of the muscles, set in action, are dilated, and so a fuller supply of arterial blood is furnished to the parts that are functionally active. Consequently increased internal pressure within the heart leads to hypertrophy in well-nourished persons. When the hypertrophy is insufficient palpitation is common. When the chambers of the heart are unduly distended its sensory nerve is thrown into action. Not only are more powerful and rapid ventricular contractions set up by the discharges of the cardiac ganglia, under these circumstances, but this sensory nerve is also the vaso-inhibitory nerve dilating the peripheral vessels (Rutherford). Such dilatation of the terminal vessels allows the blood to escape easily out of the arteries, and so lessens the amount of obstruction the left ventricle has to overcome on its systole. Without this last arrangement palpitation would be the usual outcome of effort.

An old patient of the doctor's with long-standing mitral disease never has palpitation when he has a cold. "This is most suggestive," the doctor proceeds: "In persons with atheromatous arteries and hypertrophied hearts, the subject of chronic Bright's disease the ordinary square-headed pulse tracing is altered by a cold, a pyrexia into the pointed tracing of a febrile condition. The change is exactly like that worked in the circulation of such persons by the inhalation of nitrite of amyl—an interesting experiment, showing at once how profoundly the circulation is modified by dilatation of the peripheral vessels. So in this man with a heart crippled by valvular disease, he often has palpitation."

But when the blood-pressure in the arteries is lowered by the effects of a cold, the heart can easily overcome any obstruction then offered and there is no palpitation. This fact throws great light upon the causation of palpitation by effort and explains how palpitation is easily induced when the heart is weak.

In the subjects of gout or lithiasis there is a condition of high blood pressure in the arteries, caused by contraction of the peripheral arterioles. When the blood is abnormally impure there is often arteriole spasm, causing a sudden further rise in the blood-pressure in the arteries and embarrassment of the heart.

This is the pathology of true angina pectoris. More commonly, however, the cardiac embarrassment is manifested by an attack of palpitation. Probably in each case the attack is relieved by the action of the sensory nerve, just alluded to, which dilates the peripheral vessels and relieves the heart.

In such palpitation it is well to follow this natural method of relief and to dilate the peripheral vessels by nitrite of amyl.

Neurosal palpitations of the heart may be primary or reflex. The reflex forms * * * are often due to uterine disturbance and more frequently to ovarian trouble, but they may be produced by some condition of the stomach or of the intestinal canal. * * * We know that if a number of ivory balls be placed in a row and the end one be struck it is the ball at the other end which flies from its place. So in nervous disturb-

ances the perturbation is not felt where it commences, but where it runs out. * * *

"In ovarian disturbance," if the wave of nerve perturbation passes to the stomach we have dyspepsia; if to the cardiac ganglia, palpitation, or it may travel to the respiratory center and set up a neurosal cough. At other times it passes out at the cutaneous termination of the facial nerves or of the intercostals, especially the sixth and seventh, when it is felt as a gust of neuralgic pain. This is the explanation, in all probability, of the pain under the heart so commonly complained of by women. In reflex palpitation of the heart it is essential for successful treatment to bear in mind its casual association. It is well to put a blister over the ovary, usually the left one, after the bowels are opened * * * and deaden the conductivity of the nerve tracts by full doses of bromide of potassium. * * * There is a form of palpitation which is truly neurosal, a neurosis of the cardiac ganglia, just as whooping-cough is a neurosis of the respiratory center. It is usually found in girls. * *

He answers the question: "Are nervous disorders of the heart on the increase?" in the affirmative, and after giving some of the reasons and discussing the subject of "Irritable Heart," first described by Dr. DaCosta, of Philadelphia, he proceeds in substance as follows:

"The next form of disturbance to be considered is irregularity. It has always seemed to resemble the change in a horse's feet when cantering; tiring of leading with one foot, it suddenly changes and leads with the other foot for a time, then changes again. Sometimes the beat, after a brief pause, is stronger than usual, as if the longer the discharge of cardiac ganglia had been kept back the more powerful it became. * * If the irregularity occur at distant intervals and is not influenced by exertion, then it is of no significance. If it is increased in frequency by effort then its diagnostic and prognostic value is very different."

Intermittency is a halt extending over a whole cardiac revolution.

* * * To B. W. Richardson we are indebted for the demonstration
that it may be a nervous phenomenon of little or even no significance.
(He found it to follow terror and grief and accompany passion. In two cases
hereditary. In one case from birth to the fifth year, and once in a dog.)

Dr. Richardson is quite right in insisting that it is a nervous phenomenon and that it is due to an arrested discharge of the cardiac ganglia; but nevertheless it is commonly found under circumstances which lend it gravity.

When the intermittent halt occurs at rhythmical intervals it is usually neurosal only; but if it occurs at irregular intervals, and more especially if it be increased by exertion, it is significant of organic change going on in the structures of the heart, usually of a degenerative character. Whenever the halt is so long that the blood-pressure on the brain is lowered, then the patient suffers acutely. * * * It is this matter of imperfect blood supply, especially to the brain, which makes intermittency of the heart's action serious or not, as regards its effects. This halt of the ventricle must be distinguished from that form of intermittency in aged persons, where the ventricular contraction is too feeble to affect the radial pulse.

Intermittency is commonly found along with evidences of muscular failure and frequently with indications of some fatty degeneration.

* * * When the arteries become atheromatous—lose much of their elasticity— * * * the structures of the heart become imperfectly nourished and degenerative changes ensue. Intermittency of the heart's action is not due to muscular failure except in the spurious form just described, but to a delay or failure in the rythmical explosions of the cardiac ganglia. This may be due to some irritation in the vagus, but in the very great majority of cases it is due to some change in the cardiac ganglia. They, like the muscular structure, may be imperfectly nourished and so discharge unrythmically.

So far as I am aware, no examination has yet been made of the condition of the cardiac ganglia in cases of fatty degeneration of the muscular walls and a comparison of said ganglia with those from perfectly normal hearts. * * * In some cases intermittency is found along with palpitation, especially in gouty females of middle age. * * * Intermittency so associated has occurred in my experience chiefly in women of

neurosal diathesis.

The treatment of intermittency is the treatment of the condition with which it is associated. When neurosal, by tonics and iron; when concurrent with fatty degeneration and waning power in the heart, digitalis may be added; and if it occur in persons decidedly gouty, a little potash with the digitalis.

Closely allied to intermittency is the very slow pulse of some persons and families. (A case sent by Mr. Fagin Thornton, where the heart beat twenty times a minute, without syncope or other bad symptoms; and the case of an active young man given to hunting and other energetic practices, having very slow heart-beat, but who was rejected by the authorities, are here referred to).

If there are evidences that the system, and especially the brain, is suffering from an insufficient supply of arterial blood in consequence of the slow action of the heart, then it would be a malady; under ordinary circumstances it is only a peculiarity. In one family all the members have slowly acting hearts, yet they are active and in no way suffer.

The explosive discharges of these motor ganglia are affected by temporary conditions of overwork and worry, especially when combined with an insufficiency of sleep; and much cardiac irregularity, with lack of power, is so produced. At other times temporary depression is set up by a diarrhea or a debauch. Here probably there is some failure in the muscular structures as well as the ganglia. (The mountain climbers and guides of the Tyrol are exampled.) Irregular action of the heart is like a murmur; much easier to detect than to appraise its significance. * * *

Serious organic change may be simulated by conditions which are not really grave, and the neurosal and reflex disorders of the heart are matters for the careful consideration of the practitioner.

Clinical acumen like that displayed in the above eminently practical and valued observations characterized the busy and useful life of Milner Fothergill.

DR. IRA T. RUSSELL.—In the recent death of Dr. Ira T. Russell, of Winchendon, the profession of the country loses an earnest, faithful worker and the profession and people of Massachusetts especially, a valued and valuable

citizen and physician.

Mature and vigorous in mind to the very last of his days, like the staunch old Given, of Burn Brae, Ira Russell conducted with singular success and ability the institution he founded at Winchendon, after his honorable discharge from the army of the United States at the close of the war, and the Highlands, at Winchendon, still endure, a fitting monument to his worthy memory; destined we confidently hope, under the care of his son, to go on doing good in the prosperous career started by the father.

Dr. Russell died at Winchendon, Mass., at the age of

seventy years, Dec. 19th, 1888.

He was a member of the Loyal Legion, and his comrades of the army, like his colleagues of the profession, all esteemed him for his many noble traits of head and heart.

He was also a mason, a Vice-President of the New York Medico-Legal Society and of the Massachusetts Medical Society.

Dr. Russell was a frequent contributor to the pages

of the Alienist and Neurologist.

REVIEWS, BOOK NOTICES, &C.

KNEE-JERK.

The subject of Knee-Jerk is, among neurologists at least, just at present attracting considerable attention, and deservedly so; for the reason that the strong and positive value originally attributed to its presence or absence by Westphal, Erb and others, has been found wanting. Westphal stated it was not only invariably absent in locomotor ataxia or posterior spinal sclerosis but the diagnostic sign par excellence. That when it was present there was no posterior spinal sclerosis present. It seemed that he made the phenomenon a crucial test in diagnosis.

As far back as '79 there were many eminent dissenters from the position, that absent patellar tendon reflex was a pathognomic sign, among whom was Gowers only, in England; McLane Hamilton, Bannister, Jewell, Landon Carter Gray, Beard and Hughes, in America. Hughes, in June, '79, presented and read before the Missouri State Medical Association, a paper under the title, "A Clinical Inquiry into the Significance of Absent Patellar Tendon Reflex," which was ordered published in the "Transactions," and was also published in the January number of the Alienist and Neurologist of 1880. As indicating the position in which these gentlemen stood, we quote the following, from the above-mentioned paper of Hughes:

"That the absence of patellar tendon reflex is not incompatible with every semblance of perfect health may be established to the satisfaction of anyone who will, by percussion, diligently examine the patellar tendons of any considerable number of healthy persons, in the manner prescribed by Westphal when searching for his indubitable (?) sign of locomotor ataxia: and its demonstrable and admitted absence, occasionally, in perfectly healthy persons must militate against the sign being received as certainly and unexceptionally diagnostic. That Westphal must recede from the uncompromising stand he has taken, seems certain, in view, not only of the fact that it is sometimes physiologically absent (more often, perhaps, than we think, though precisely in what proportion of cases, no one has yet definitely determined), but in the face of accumulating antagonistic evidence on this side of the Atlantic, at least."

In this paper Hughes reports, in support of Westphal, four cases; three undoubted, one doubtful, of locomotor ataxia. As militating against Westphal's declaration Dr. H. presents two cases of locomotor ataxia in which the patellar reflexes are decided and normal, and three cases of individuals who, as far as human power was capable of proving, were in perfect health and in whom the patellar reflex, after repeated and prolonged trials, could not be elicited. One of these cases we know, to-day, to be still living and well. Dr. H., in conclusion, speaks as follows:

"From these clinical demonstrations we conclude that, while absent patellar tendon reflex is often of significance as an associated symptom of present locomotor ataxia and may even serve, when unassociated, to excite suspicion of its approach; we are not justified in regarding it, when it is the only phenomenon observable, as a certain sign: or when absent and the other symptoms are present, in excluding a diagnosis of posterior sclerosis. It cannot have the diagnostic significance claimed for it, when it may be observed in indubitably healthy states of the cord, and when the reverse condition of exaggerated excitability may undoubtedly be found in cases of unquestionable posterior spinal sclerosis."

In looking over the field to-day we see that the prophecy uttered in '79 by Dr. Hughes has been literally fulfilled. Erb some time ago admitted that the patellar tendon reflex was not possessed of the value he at first thought, and has placed it in its proper position as a diagnostic sign.

Westphal at last has also receded from his radical position, and now admits that he was mistaken.

Ranney has found, in a large and extensive series of observations, that two per cent. of the individuals in whom the patellar tendon reflex cannot be elicited, are not afflicted with locomotor ataxia.

Last but not least, Dr. Warren Plympton Lombard, of Baltimore, Md., in a highly scientific and satisfactory method, has determined, from 6,639 observations, of which he, with tables and tracings, reports 5,476, in the November number ('87) of The American Journal of Psychology, which demonstrates beyond all reasonable doubt that the knee-jerk in a perfectly healthy individual, varies in a marked degree. This variation is not only from day to day but is even manifest at different times in the same day. These variations were found dependent upon fairly uniform determinable causes, and it is not difficult to conceive that these same influences, if carried to a little greater degree and persistency, might abolish for the time being the knee-jerk, and under the old idea lead to distressing blunders in diagnosis and treatment.

The paper of Dr. Lombard is too exhaustive and lengthy to do more than indicate the salient points. His method of producing the knee-jerk places his observations in the field of absolute accuracy, and removes all objections that might be advanced against the value of his work. The apparatus consists of a hammer having a rounded edge, at each end of the head, one horizontal, the other vertical, suspended by an axis through its handle. This enabled him to let it fall like a pendulum and produce a blow the force of which would depend upon the weight of the hammer and the height through which it fell. A scale in degrees, with a catch for the hammer, was arranged so that the distance through which the head passed could be measured, and the hammer would be started by the influence of its own weight at the moment the catch was pressed out of position. This insured an absolutely uniform force in the blows given at any one point on the scale. The leg and foot were arranged so that a perfect involuntary position could be maintained, and the quadriceps be relieved of the weight of the foot and leg, thereby insuring the production of motion from the slightest contraction. This placed the subject on his side, the thigh resting in a well fitted support to the knee, the leg free, the foot supported in a swing suspended by a long rope from the ceiling. To

the back of the swing, at the heel of the foot, at right angles to the leg, was fastened by a ball and socket joint, a steel rod, to the distal portion of which was attached at right angles a steel needle, which wrote on tracing paper the movement produced. The free end of rod by its weight rested on a small frictionless wheel. In this way the forward and recoil movements were traced, the base line being marked at the time the leg was at rest.

The object of the experiment was to determine the extent of knee-jerk in the case of one man who was well and leading his usual regular life, during a period of many days. First series was for fifteen days. Examinations, seven per day, twenty-five experiments at each examination. Hours for examination were, 8.15 A. M., immediately after rising; 9.15 A. M., soon after breakfast; 1.15 P. M., just before lunch; 2.15 P. M., just after lunch; 6.15 P. M., just before dinner; 8.00 P. M., soon after dinner; 11.00 P. M., just before going to bed. The hammer was placed so that it just touched the skin when hanging free, over the middle of the ligament. It was let fall through an arc of forty degrees for each blow. The results are tabulated in the following way:

Time of examination; number of experiments; average movement, in millimeters; extremes of movements; lightest effective blow; extracts from Daily Journal and U. S. A. Weather Observations, which included time, barometer, thermometer, humidity, wind and weather.

The study of the results shows:

First. That whatever the time of the examination the extent of the knee-jerk varied greatly in succeeding experiments.

Second. The average of the experiments made when subject was just out of bed and not thoroughly roused, was low; that fifteen minutes later, after a bath, it was higher; that an hour later, just after breakfast, it was still higher. From this time to just before lunch, it declined considerably, and again rose slightly higher just after than it was just before lunch. Again it declined markedly till just before dinner. After dinner it recovered somewhat, but only to fall again, if but slightly, and at bedtime was very much less than it was just after breakfast, and even less than it was just after the bath before breakfast.

It is seen by this that the knee-jerk is greatest just after breakfast and, in spite of the fact that each meal tends to increase it, it is much lower at bedtime. This diurnal variation was found to be constant in the summary of the results for the entire series. The effect of meals on the knee-jerk was, as a rule, to increase it.

The effect of muscular fatigue was to decrease the extent of the kneejerk, as shown by the following table:

Time of Exam.	Extracts fro	om Journa	1.		Αv.	Knee	e-jerk.
11.00 A. M., after writing	half-hour			-	-	71 n	am.
11.15 " after walking	g up and do	wn stairs	fifteen	minute	es,	28	64
11.45 " after talking	earnestly			-	-	32	66
1.00 P. M., after studyin	g curves ar	hour		-	-	44	66
2.15 " just after lur	ch -			-	-	46	66

It is seen that the muscular exercise decreased the extent from 71 mm, to 28 mm.

The effect of mental state was found of an indirect but nevertheless considerable character. The conclusion drawn is, that apparently it is those centers which are the seat of the will and emotions, rather than those concerned in such forms of mental work as adding, memorizing and planning, which chiefly cause the variation; and this is found to be more an influence of reinforcement than decrease. As far as could be judged simple mental fatigue, as well as bodily, while intimately retroactive, tended to decrease the extent of knee-jerk.

Dr. Lombard's almost startling confirmation of Jendrassik's discovery of the phenomena of reinforcement of the knee-jerk, afterwards so ably corroborated by Weir Mitchell and Dr. Morris J. Lewis, is exceedingly valuable and interesting.

Jendrassik observed that if the hands were clenched just before the ligamentum patella was struck that the resulting jerk was decidedly increased.

In Dr. Lombard's work, when we bear in mind the fact that each blow was of the same force, at the same spot, in like and regular intervals, and that the response was in different strengths, we find we can accept as a safe basis for determining scientifically the causes of the variations.

There can be no reasonable doubt but that the knee-jerk is a reflex act dependent upon the reflex centers in the cord, and to those centers, if we accept the above, must we look for the source of the variations. The conviction is forced upon us that the extent of the knee-jerk is a resultant of a vast number of reinforcing influences, and that a dominance of any one is the only means we have of recognizing what they are. We find that what was stated as a clinical observation by Hughes in '79 definitely accounted for by Jendrassik in '83, corroborated by Weir Mitchell and Lewis in '86, is beyond all reasonable doubt confirmed by Lombard in 'S7. Thus, at 6.30 P. M., April 6th, the average knee-jerk was 14 mm., and the reinforcement from a blow which chanced to be given at the moment when the ear itched was 63 mm.; at 12 P. M., April 12th, the average knee-jerk was 13 mm. and itching of the skin caused a group of reinforcements, viz., 37, 14, 25; 25 mm.; at 6.15 P. M., April 11th, the average was 27 mm. 50 mm. was recorded from a blow at the moment the act of swallowing took place; on April 8th, at 6.15 P. M., the average was 44 mm. Talking produced the following increase: 71, 75, 86, 82, 74 mm. Clenching the hands or teeth enormously increased the movement. April 2nd, 6.15 P.M., child cried in next room-was at once soothed; in a few moments cried again, and was quickly quieted. The result was 23 mm. average, increased to 47-46 mm. at the time sound was least. April 12th, 8 P. M., average was 29 mm. Heard someone coming upstairs; knee-jerk increased to 71 and 60 Accustomed sounds had no influence if the attention was not directed to them.

April 2nd, 8.15 P. M., average knee-jerk 19 mm. Subject spoken to; increased to 48 and 40 mm.

April 4th, 1.15 P. M., average 20 mm., rapidly multiplied mentally, 32 mm. recorded.

Marked changes were also recorded from exciting mental work. Changes in the respiratory rhythm, dreams and music, were found potent.

In the latter case there was a remarkable obedience to the emotional influence; sprightly, lively, heavy passages increasing; light, calm passages decreasing the extent of the knee-jerk.

The influence of the weather was found an undoubted element in the extent of the phenomenon. High temperature, low barometer, act to lessen; low temperature and high barometer acted to increase the extent of the knee-jerk.

Changes in the electrical potential of the atmosphere, relative humidity, when slight, and change of wind, had no significance. All of these

were secondary to hunger and fatigue.

We have presented the salient points in Dr. Lombard's paper in more extended form than might seem necessary, but feel that it is too valuable to ignore. The manner in which he has confirmed, by actual scientific demonstration, the variations pointed out long ago by Hughes, Mitchell and Lewis, and demonstrated the extent of influences that act as reinforcing elements in the extent of the knee-jerk in a healthy man, or what can be justly termed the "normal knee-jerk," is, to the general practitioner, of no small moment. From this we see that the patellar tendon reflex can be entirely absent in health; that it, in connection with other nervous symptoms, is valuable in the diagnosis of posterior spinal sclerosis, that as a pathognomonic sign alone it is of no value; that in health, if present it may vary in extent in a marked degree, and that in determining any modifications in it, as an indication of pathological changes in the cord, we must take into consideration a vast number of influences. In fact its exact value can only be determined by a strict process of exclusion.

GEO. F. HULBERT, M. D.

TREATISE ON THE DISEASES OF WOMEN. For the Use of Students and Practitioners. By Alexander J. C. Skere, M. D., Professor of Gynecology in the Long Island College Hospital, Brooklyn, N. Y., etc. With 251 engravings and nine chromo-lihtographs. New York: D. Appleton & Co., 1888.

This is one of the most sensible and temperate treatises on gynesiac disease published. The author's rational views as well as his extensive familiarity with his subject, will surely find approbation from all discriminating readers. Discussing the nervous, nutritive, muscular and sexual systems, that author thus pertinently says:

"No one can be a trustworthy specialist without having a thorough-knowledge of the whole organization. All parts of the body are so bound together by mutual relations that one cannot accurately diagnosticate the diseases of one portion without knowing the condition of all the others. * * *

"Perverted function of the cerebro-spinal division of the nervous system is manifested through derangements of sensation and motion, and abnormal states of the organic nerves is indicated where nutrition is deranged, while the organs of nutrition are free from organic disease. The condition of the circulatory system is indicated by the color of the skin and mucous membranes, the character of the pulse, and the heart-sounds.

"The general nutrition may be estimated by the appetite for food, the-

excretions, and the state of the tissues generally. These are meager hints, but, if kept in mind while examining cases in the department of gynecology, will guard against the mistake of overlooking affections of the general system, which might modify or cause diseases of the sexual system."

The author is, in our judgment however, entirely too radical in his recommendation of operative procedures in cocyxigodynia, as the mild descending constant current, arsenic, hypophsphites and the bromides combined, and conjoined with invigorating constitutional treatment and ample outdoor life in an invigorating atmosphere have never failed, in our experience, to do away with the necessity for the knife. The cause of cocyxigodynia is, in the vast majority of cases, constitutional and neural, and a local operation is contraindicated, as the sequel of persistent constitutional treatment clearly proves. Without taking the reader's time or needlessly encumbering our pages in discussing the many judicious operative procedures proposed in this book for pure gynesiac disease not otherwise remediable we proceed to subjects more germane to neurology.

Neuralgia of the neck of the bladder and other functional diseases of this organ (mostly neural) are skillfully handled, but we also pass them by in order to go on, within our allotted space, to the subject which more especially interests alienists and neurologists, namely, "gynecology as related to insanity in woman," and here we introduce a few interesting excerpta.

In Chapter LI, the author gives the steps by which he was led to walk securely in psycho-genesiac paths and conclusions from his experience, thus:

"The relations which exist between the sexual organs of women and diseases of the brain and nervous system, had occupied some of my time and attention in the past, but my opportunities for observation were limited, until Dr. J. C. Shaw, the Medical Director of the King's County Insane Asylum at Flatbush, invited me to take charge of the gynecological practice in that institution, counting among its inmates about four hundred female patients. This gave me extended facilities for studying this special department of medicine as it presents itself among the insane.

"Upon entering this field of observation, I was confronted with an entirely new phase of practice, in which the ordinary methods of investigation were of little value. No correct histories could be obtained from the patients themselves, and the records kept by the physician in charge, though full and correct in all that pertained to the mental conditions, afforded but little information of value to the gynecologist. * * *

"The system of investigation adopted, and the phenomena observed, together with the deductions drawn therefrom form the object-matter of this chapter. * * *

"Regarding the etiological relations of diseases of the brain and sexual organs, little need be said at this date. I take it for granted that all will agree that insanity is often caused by diseases of the procreative organs, and on the other hand, that mental derangement frequently disturbs the functions of other organs of the body, and modifies diseased action in them. Either may be primary and causative, or secondary and resultant. In the literature of the past, we find the gynecologist pushing

his claims so far as to lead a junior in medicine to believe that if the sexual organs of women were preserved in health, insanity would seldom occur among them. While the psychologist, or alienist, holds that women will lose their reason and regain it, without much help or hindrance from their reproductive organs. The ablest and best men on both sides take the human organization as a whole, and give to each portion its legitimate share of credit for good and evil. On this branch of medicine the boundary lines which divide the gynecologist and psychologist often touch and cross each other, and it is necessary that we should know where they touch, and where they diverge. To know this will insure a cordial agreement as to when the two specialists shall act separately, and the conditions which require them to labor together for the benefit of those who suffer in body and mind.

"From my investigations, I have been led to the belief that up to the present time the effect of disease of the sexual organs in women in causing and keeping up insanity, has been more correctly studied than the influence which insanity exercises upon the sexual organs. This opinion may have been formed from the fact that my observations have been made especially from the stand-point of the gynecologist and therefore the other side of the question has not been so clearly seen. But the reasons for holding this belief are, that the one line of investigation is easier than the other, and our literature shows that most investigators have chosen the sexual organs as the starting-point of their inquiries. The gynecologist has the advantage of knowing when his patients have uterine or ovarian disease, and if insanity follows in any of his cases, he may be able to estimate the influence of the primary disease in causing the mental disorder. On the other hand, the psychologist may have a number of insane patients who suffer from uterine and ovarian diseases which may escape his notice. This may readily occur even among the cases of insanity caused by diseases of the sexual organs. Derangement of the mind often obscures all the symptoms of bodily disease, and therefore the medical attendant is liable to be misled. One is not apt to overlook insanity in patients known to have disease of the sexual organs, and hence the advantage that the gynecologist has in studying the relations of these two forms of morbid action. For reasons such as these, one should not find fault with psychologists for not having done more to develop this branch of medical science, but rather remind gynecologists that they have done so little, considering their opportunities.

"At this point, attention may be directed to the way in which diseases of the sexual organs cause insanity. We have long recognized the cause and the effect, but the mode of action of the one in producing the other may be admitted, in many cases at least, as an open question.

"The rule has been to attribute insanity (when developed during the existence of uterine or ovarian disease) to reflex action. The well-known book by Dr. H. R. Storer affords a notable example of the position given to reflex action in the etiology of insanity. This, no doubt, is an important factor in the cause of mental derangement, but it is far from covering the whole ground. An acute disease of the ovary or uterus, or a displacement of either, is sufficient to cause a mental derangement (in some highly

sensi.ive organizations) which will subside when the disease of the pelvic organ is relieved. Such cases are no doubt reflex in character, but there are a great many more cases of insanity than can be traced to the sexual organs in which reflex action takes no part. Take for example, cases of uterine disease, preceding by an interval of years the mental derangement which follows without any increase of the primary disease. In such cases it is probable that impaired nutrition of the brain, which occurs as the result of prolonged suffering, is the direct cause of insanity, and not the result of reflex action from the disease of the sexual organs. The irritation and exhaustion produced by uterine or ovarian disease is simply the predisposing indirect cause of the insanity, while the direct cause is some lesion of nutrition of the brain itself.

"One of the most marked and important causes of insanity among women of the poorer class is frequent child-bearing and lactation. The extraordinary taxation imposed by their maternal duties deranges the mind of a vast number of women. This fact is quite familiar to medical men, and has been proved to my own satisfaction by clinical observation, and a perusal of the records of all the asylums in this country. From these reports I find that the largest number of insane women is found at from twenty-five to forty years of age, and that of these a large percentage have been married and have had children. Of this number, some may have had disease of the sexual organs, but there can be no doubt that a large number become insane from the exhaustion of frequent child-bearing and lactation, without any other complications. These cases of insanity can be traced indirectly to extraordinary functional activity of the sexual organs, but cannot be called cases of reflex insanity. There is a difficulty in turning the records of asylums to account because they are not kept so as to bring out the history of the sexual organs, or the relation of their diseases to insanity. Nevertheless, there are facts sufficient to show that child-bearing and lactation bear an important relation to mental disorders.

"There is too little in our literature on the subject of mania caused by the exhaustion of the nervous system from child-bearing and nursing. The true bearing of the sexual organs in this connection is liable to escape notice, because the mental weakness or nervous exhaustion is the first manifestation of disease. There is no uterine or ovarian disease to attract the physician's attention while he is seeking for the cause of mania. Our books tell us of anæmia from prolonged lactation, but say little of the nervous exhaustion which may or may not be accompanied by anæmia."

Regarding child-bearing as a cause of insanity, he says:

"We may go on beyond the apparent effects of rapid and long-continued reproduction and ask the question, why should the exercise of this normal function so often sacrifice the mental and physical health of women? The answer is, that too many other duties are usually imposed upon women during the age of reproduction. Among the poor the wife is required to work for her livelihood, as well as to give life and sustenance to her children; even among the rich we often find that very little allowance is made for maternal duties. These combined exertions of reproduction and every-day labor to which so many women are subjected, are more

than the strongest constitution can endure. This will be granted by the most fanatical believer in the mental and physical capabilities of women. It may be questioned if even physicians at all times fully appreciate the demand made upon the female organization by reproduction. During pregnancy, there is often an apparent or real increase in nutrition of the individual, which gives the highest evidence of good health; there is also a manifest ability to do ordinary work that is surprising. But if this power is abused, as it often is, the result must be general debility. The resistance to this overtaxation may be and often is maintained for a long time. The first pregnancy and lactation do not necessarily break down the constitution, but the repetition of these, with the duties and cares which multiply as life advances, exhaust the nerve power, and lead in many cases to mental derangement. This is especially so among those who have been raised in ease and comfort without acquiring habits of industry. When daughters of these families marry into less affluent circumstances, or when Fortune turns against the young wife and mother, and disappointment and privation are added to the taxation of household duties and the raising of a family, then we have all the conditions necessary to cause insanity. Many cases having such a history can be found in our asylums. The insanity occurring under such circumstances is generally centric, and not reflex, and yet dependent to some extent on the sexual organs.

"Normal functional activity of the reproductive organs sometimes tends to undermine the brain and nervous system to an extent sufficient to lead to insanity, and I am satisfied, from cases occurring in my own practice, that it occasionally does so.

"There is a prevailing opinion that insanity occurs very frequently at puberty, and the cause in such cases is generally ascribed to reflex action. This, no doubt, is frequently the true cause, but not always. Mental and emotional excitement occurring in connection with demands of the reproductive system abruptly made at that time may develop insanity at puberty, when the sexual organs are well developed and perform the function of menstruation normally. Again, insanity, occurring at the menopause, in place of being due to disease of the sexual organs, can often be traced to deranged conditions of the general system, such as imperfect elimination, or as the older authors state, the sudden suppression of an accustomed discharge.

"Enough has been said to show that a clear distinction should be made in the study of etiology, between insanity caused by existing active disease of the sexual organs, and insanity arising from brain exhaustion produced by prolonged or excessive functional activity of these organs while free from any disease. We incline to the belief that as many or even more cases of insanity can be traced to the latter, i.e., exhausting activity, as to the former, i.e., active disease of the sexual organs. The bearing of these facts upon the diagnosis and treatment of insane women will be apparent to all medical men. In the one class of cases the sexual organs require no attention, except as factors in the indirect cause of the mental affection; while in the other the disease of the sexual organs is the direct cause of insanity, and tends to keep it up until removed by the treatment, which ought in all cases to be instituted."

The author thus indicates his views on the effect of insanity upon the function of the reproductive system:

"Observations during six months were made on two hundred women ranging in age from seventeen to forty-six years. At the end of that time eight were lost, some by death, and the others discharged from the asylum. Of the remaining 192, there were only 27 who menstruated regularly and normally; 30 did not menstruate at all; 4 menstruated once; 8 twice; 10 three times; 18 four times; 34 five times; 24 six times at irregular intervals; 31 seven times, and 6 eight times during the six months. This record shows to what a marked extent the menstrual function is disturbed among insane women. There are perhaps other conditions in which two hundred women possessing the same degree of physical health could be found with menstrual derangements to the same extent. These disorders of menstruation are accounted for in two ways. The impaired general nutrition which prevails so extensively among the insane is sufficient to arrest the menses in a large proportion of cases. The general health is reduced so far below the normal standard, as to compel the individual to suspend all functional activity not absolutely necessary to life. The same symptoms occur in any of the exhausting diseases, such as phthisis pulmonalis, as every physician well knows. The amenorrhœa is conservative when it occurs under such circumstances, and should not be considered abnormal, but as a fortunate provision of Nature to relieve an overtaxed organization from a duty which can be neglected with less injury to the individual than any other function. That the suspension of menstruation is caused by malnutrition, is evident from the fact that the same condition occurs in other diseases when the nutrition is markedly impaired. Additional proof is also obtained from the fact that the sexual organs in such cases are generally found to be anæmic, presenting the appearance of those who have passed the menopause, except that there is not always atrophy such as we find in the very aged. A sufficient number of the cases having suppression of the menses that are recorded in the table were carefully investigated to show that there was, in most of them, impaired nutrition of the sexual organs, to account for the amenorrhea. On the other hand, amenorrhea finds its cause in the diseased nervous system alone. A few cases, and especially one, came under observation in which the general nutrition was normal, the pelvic organs were in a healthy condition, and still there was amenorrhoea, due, beyond doubt, to imperfect innervation. An abundance of proof could be brought forward to show that the deranged innervation, such as occurs among the insane, causes suspension of the function of the sexual organs; but it will suffice to recall the fact that mental shocks, prolonged mental anxiety, and the like, have been long recognized as causes of acute suppression of the menses. Cases without number are on record which establish this fact.

"As a number of patients who came under my care menstruated regularly and some of them had menorrhagia, or too frequent menstruation, the question arises, why was that the case, all of the patients being insane? According to the rule forced upon us, that insanity tends to suspend the menstrual function, all the insane should have amenorrhea, but

they do not. The answer then is that menstruation is affected in proportion to the degree of insanity. In those patients who menstruated normally the insanity was of mild type, not sufficient to impair either the nutrition or the innervation of the pelvic organs to any marked extent; and in those who suffered from menorrhagia, or too frequent menstruation, there was some form of uterine disease present.

"Well-developed insanity, with impaired general nutrition, causes suppression of the functions of the sexual organs. Deranged innervation tends to produce the same result. In mild forms of insanity menstruation may continue normal. Excessive menstruation among the insane is usually caused by uterine disease, and should be accepted as evidence of such. * * *

"It cannot, however, be claimed that amenorrhea is a sure indication that all the functions of the sexual organs are suspended. We know well that ovulation may continue, while menstruation is absent, and so may the venereal desire; but such cases are exceptional. Moreover there are other reasons for believing that a general functional inactivity prevails in those cases characterized by amenorrhœa. In a few cases of this class, when a post-mortem examination has been made, the evidences of ovulation have been absent. More facts are needed to fully establish this point."

These are plausible views in which neurology concurs.

He answers the question, What effect does insanity exert upon these diseases? thus:

"It appears that all authorities upon uterine pathology agree that, in a host of cases of uterine diseases met in practice, there exists an excess of nerve irritability and hyperæmia, without any well-defined change in the structure of the tissues, excepting that which occurs in all pathological congestions—a condition which implies a change in the quantity of blood and caliber of the vessels, which is not permanent, but disappear under influences which enable the vessels to regain their original size and tonicity. This class of diseases is distinct from the organic, in which well-defined and easily recognized changes of structure exist. For want of a more comprehensive and accurate name these are called functional affections.

"The influence of insanity on this class of diseases is most favorable. It may be stated fairly that such diseases disappear upon the occurrence of mental alienation. To use a popular, but unscientific expression, insanity tends to cure functional diseases of the uterus. This statement may excite question and opposition, but clinical observation compels this conclusion and renders it worthy of the highest consideration. It should be clearly borne in mind that the influence of insanity does not extend beyond this class of diseases, that it does not affect organic diseases to the same extent at least. This is not claimed by any means; but the effect upon the functional forms of disease is marked, and, we think, unquestionable." Vasomotor diversion explains this.

"Attention was first directed to this subject by watching the progressive history of a case which was under observation for congestion of the uterus and leucorrhea. She became insane, and her uterine disease disappeared without local treatment. The disease of the uterus, added to

other causes of mental disturbance, was supposed to have acted a part in the causation of her insanity. Other cases followed this one, until sufficient material was obtained to show the relationship of the mental and uterine disease. Some cases, indeed quite a few, whose history of former uterine diseases I obtained through friends, when examined in the asylum were found to have recovered. The disappearance of functional uterine disease upon the occurrence of insanity agrees with the facts observed regarding the influence of mental alienation on the function of the sexual organs. That the vital activity of an organ or system can be lowered by the influence of disease existing elsewhere in the organization to an extent sufficient to cause arrest of function is evidence that functional disease may disappear under the same circumstances. The same action is observed in the pathology of other diseases. The literature of Medicine furnishes numerous illustrations of the fact that disease in one part of the body may disappear upon the development of morbid action in another. This is all comprehended under the head of the antagonism of diseases, the same law which recognizes the physiological antagonism of medicines. It is not claimed that all functional disease of the uterus disappears when insanity is developed; but this occurs so generally that those cases in which the uterine derangements persist may be classed as exceptional.

"This peculiarity of uterine disease among the insane has probably led psychologists to attach but little importance to uterine disease as complicating mental affections. This is the only reason or excuse for those who claim that the sexual organs require but little notice from those who have the care of insane patients. Such observers have caught a fraction of the truth, and endeavor to make it cover more ground than belongs to it. The influence of insanity in arresting the progress of uterine disease relates almost exclusively to the class of affections above stated, and does not apply to other forms of local disease of an organic character. Those who claim much more are as far from the right as the gynecologist, who believes that the great majority of women who lose their reason do so because of disease of the sexual organs, and that all insane women should be placed in charge of the specialist for diseases of women.

"The class of insane women who have simply functional diseases of the sexual organs requires no care from the gynecologist, beyond what is necessary to establish the fact that there exists no organic disease. This in itself is an important service, and one which only the gynecologist can render; but when the diagnosis is settled in the negative, the patient should be left to the psychologist. The relief of deranged menstruation and functional diseases must come through improvement of the general health and the cure of the insanity, and not by any local treatment, except hygienic, and this the alienist is as competent to afford as the gynecologist.

"The same rule of practice should be followed in the management of this class of patients that is observed in cases in which the function of the sexual organs is deranged from any other disease of the general system, like pulmonary phthisis, nervous exhaustion, and such like; i.e., to restore the general system to health, and trust that restoration of the sexual organs will follow.

"There is one class of insane patients already referred to, in which there appears to be a functional derangement of the sexual organs, which would apparently call for the gynecologist's care; viz., those who manifest insane sexual desire, or whose ravings are obscene and licentious. Such cases often take their origin in some disease or abuse of the sexual organs, which either disappears or eludes the diagnostic skill of the gynecologist.

"While the mental derangement points to trouble of the pelvic organs, no disease can be detected. Local treatment in such cases can effect no benefit, because the disease is centric and not reflex; hence, the treatment must be directed to the nervous system. When it is stated that manifestations of sexual excitement may originate in the brain or nervous system, we have clearly in mind that the same symptoms may arise from disease of the pelvic organs, and will refer to that class of cases at another time. We take the ground that abnormal sexual excitement sometimes has its origin in the nerve centers, and that too when the sexual organs are free from disease, and that a mental derangement of an emotional character may continue after the disease which caused it has subsided. The importance of clearly distinguishing diseases of the sexual organs that cause and tend to keep up insanity, and mental derangements, which exist independent of lesions of other organs, can hardly be overestimated.

"Organic diseases of the sexual organs exercise a most important influence in causing insanity, and tend to retard recovery from it. Under that head, are included all the appreciable diseases of the ovaries, uterus and vagina, that are characterized by change of structure or position. These need not be named individually, but I may mention some conditions that are more properly called results or products of disease, in contradistinction to active morbid processes. Such are the products of pelvic peritonitis and cellulitis, cicatrices of the cervix and vagina. These, by adhesion and contractions, often cause severe pelvic pains, sufficient to induce or keep up insanity.

"These affections of the sexual organs frequently cause insanity directly or indirectly, and unlike functional diseases, are not as a rule relieved by the mental derangement which follows. It is evident that no disease of the brain or nervous system could favorably influence a displacement of the uterus or the ovaries, nor modify the ill effects of a laceration of the cervix, nor check a leucorrhea due to that lesion of the organ. On the contrary, insanity which too often debars the sufferer from requisite treatment, and even the care that she would take to favor her infirmities while in sound mental health, tends to prolong, if not to aggravate the pelvic disease. These diseases of the sexual organs remain as a disturbing element to keep up the derangement of the brain, or at least to retard recovery. In this way the insanity and the disease of the sexual organs act in concert to maintain each other, to the detriment of the unfortunate sufferers. There are but few cases in this class, where the disease of the pelvic organs can be lessened in severity by the presence of insanity. The general anæsthesia which occurs in some forms of insanity, may relieve the patient from the suffering of pelvic pain arising from old adhesions. So also a dysmenorrhea, which is largely due to an exalted nerve irritability, may be modified or entirely relieved. In prolapsus of the ovaries and chronic ovaritis,

the pain may be calmed by the mental derangement as by opium, but still in such cases, although the patient appears to suffer less, the question may be asked: Does not the disease exert as powerful an energy for evil upon the brain and nervous system of the sufferer? It is possible that while the patient is so fully engaged with insane fancies as to disregard physical pain, the local irritation exists none the less, exercising its depressing influence. Be this as it may, it is certain that whenever disease exists in the sexual organs of insane women, the condition of the brain, if influenced thereby at all, must be affected unfavorably. If such diseases of the sexual organs are capable of causing insanity (a fact that appears to be settled by our best thinkers on both sides), they must also tend to keep it up. It is to this class of genital affections among the insane, that the science and art of gynecology apply with most marked advantage. Functional derangements and diseases of the sexual organs among the insane may be left alone and the patients committed to the psychologist, with confidence that they will secure all the benefits that medical science can afford. In this department those who care for the insane may insist upon non-interference from us. But when insane women have organic diseases, they have a right to all the relief that they can obtain from gynecology, and that is certainly very much."

On the subject of the curative treatment of co-existing disease of the sexual organs the author writes:

"Anyone who is familiar with our current literature would, on first thought, be prompted to say that the results are very gratifying—even wonderful. There are cases recorded without number in which all varieties of strange nervous affections and mental disorders have disappeared as if by magic, upon the replacement of a dislocated uterus, or the restoration of a lacerated cervix. Much of this literature may be worthy of acceptance as exact science, but there is much of it that may be challenged as having no other claims upon our notice than the fact that recovery of one affection followed the cure of an accompanying one; but what relation the one had to the other remains a mystery. To accept all such testimony as correct, would be as unsafe as to believe that sense and reason could be promptly restored to all insane women by curing any disease of the sexual organs that they had."

The author here refers to the rule that is observed in other departments of pathology, in which two or more diseases are related to each other in the order of cause and effect, viz., a secondary disease does not always disappear when the primary one, which acted as the cause of the other, is cured. This defines the limits of the success which the gynecologist may expect to have in practice among the insane.

Having endeavored to outline the conditions which demand the service of the gynecologist among the insane, the author invites attention to the subject of diagnosticating diseases among this class of patients.

The author found an endless number of difficulties which are not encountered among sane women. To overcome these and find means and ways of ascertaining the clinical history and physical indications of the state of the sexual organs required much study, and the results are given

in the book before us; but the reader must consult the book itself, as we have no further space for extracts, and we can assure him its consultation will prove a profitable one.

After a critical examination of this book we most cheerfully commend it as broad in observation, wide in experience, temperate, judicious and fertile in remedial suggestion. It represents the experience of a long and successful professional career of one of the ablest and most temperate gynecologists of the country, and as such we commend it as a valuable contribution to the literature of the profession.

Dr. Skene takes the broad ground for which neurologists have long contended with reference to gynesiac disease, that the patient should be treated all over with a special end in view, and we think the author is fundamentally correct.

HALLUCINATION AND ITS ALLIED STATES. By J. S. Conrad, M. D., Resident Physician Matley Hill Sanitarium for Mental and Nervous Diseases, St. Denis P. O., Baltimore County, Md.

Is an interesting contribution from a psychiatric clinician of large experience.

Want of space forbids a complete analysis of the entertaining *brochure* before us, but the following extract will suffice to epitomize the author's views and inspire the reader with a desire to read the entire paper:

"Hallucination, and its allied states, may be either physiological or pathological.

"Hallucinations are essentially subjective sense perceptions, originating in the respective sense ganglia, of the cortex (or fore-brain); thence projected to the peripheral terminus of the centrifugal (dirigo-motor) nerve tract as a reality of consciousness. The special mental percept in consciousness may originate in the disturbed or irritated nerve ganglia (de novo), as much so as if the irritation or disturbed molecular motion, had pursued its natural course from the periphery, and been received as an irritation of the centripetal (recipio-motor) terminus of the special nerve involved, either auditory, visual or tactile. The special hallucination, whatever it may be, has all the force in consciousness as if the real words, or object, had had audible expression, or physical form, as an objective fact, to either the auditory or visual nerve terminus, and so with the other senses. Long habit has determined its terminal reference, so much so as that it requires an effort of judgment in the sane to define its subjective or objective origin, as will hereafter appear in the case of phantom sensation. The majority of hallucinations (if not all) originate in the central ganglion of the special sense irritated. Luys considers that the sense irritation is first received as a percept in the thalami; thence transmitted to the cortex. Baillarger also maintains that they may, and do sometimes, originate by irritation at the periphery or at any point along the tract of a sense nerve, thence to the cortex. These he designates sensori-psychical, which he distinguishes from those of central origin, which latter he calls psychosensory. In either or both cases, however, the conscious interpretation remains the same. The first, or senso-psychical, is somewhat sustained by the well-known fact of sensation in the fingers or toes of persons who have amputated arms or legs, which phenomenon is known as phantom fingers or toes. These phantom symptoms (ballucinations or illusions?) are interesting from the facts, viz., that as time increases from the date of the amputation, it is found that the unnatural distance of the phantom approaches the stump, until at last it establishes in consciousness its proper sense location at the point of amputation; and, second, that in doing so, from first to last, the conscious interpretation of its location is recognized as a delusion, and consequently the phenomenon becomes no longer an insane hallucination, neither a delusion, but a sane illusion of sense, or what is known as a physiological hallucination or illusion. Strictly considered, such peripheral sense irritations or impressions above referred to are not at all to be classed as hallucinations, partaking as they do, more of the nature of illusions of sense, since they have an objective basis of fact, and therefore more physiological than psychological, which latter more strictly implies subjective relations of consciousness. Hallucination of any one of the senses is not inconsistent with sanity-Martin Luther, Cowper, Charles Lamb, Sam Johnson, and Andral had them-yet in all cases the judgment, will, emotions and feelings are more or less affected at the time. The intellectual interpretation by these faculties of mind will alone determine the sanity or insanity of the subject. Hallucinations of the sane and insane are the same in type, the difference being the former interpret correctly the false sense perceptions, whilst the latter do not do so; it is only a difference of degree of intellectual co-ordination, not one of kind. Esquirol long ago (page 108) said, in writing of ballucinations, 'the senses are not concerned in their production: they occur although the senses do not perform their functions, and even though they do not longer exist' ('Treatise on Insanity,' 1845). In this sentence we have a clear foreshowing of cerebral cortical localization, from clinical observations, long before Broadbent and Hughlings Jackson made like inductions from not dissimilar clinical observations concerning cortical epilepsy, whilst Ferrier confirmed and extended the results of Fritsch and Hitzig's observations."

The author gives the following instructive history of an hallucinated deaf-mute:

"During the past year a case of a deaf-mute came under my observation with both imperfect auditory and visual hallucinations; together with both these there were illusions of both these senses, which illustrates the fact that the projection of the image or sound to the periphery is not essential in the final determination of the hallucination or illusion, but may be entirely confined to the cortical area of origin, imperfect as it is. I do not believe it possible for a deaf-mute (from birth) to be the subject of auditory hallucinations, no more so than that it is physiologically possible for one to have visual hallucinations who is blind from birth, or one to walk without limping, who is born with congenital shortening of one leg. The sense perception has never been completely developed or educated, nor audible sound or visual sight registered in consciousness. The case referred to was an illustration of the physiological and psychological truth. In this case the audible sounds were blurred, indefinite, inaccurate. She could hear vibrations, enough to say that a 'party was going on below

stairs,' and could cortically hear noises when there were none to be heard. When tested (at the piano) she could also hear confused sounds. The blind hallucinant (from birth) does likewise. Both hear and see imperfectly in sense definition, but as the cortical ganglia of these senses have been deficient from birth, their conscious interpretaitons must also be deficient, and will be found to be so when carefully examined. In some cases where total deafness has occurred ln early childhood from scarlatina or other cause, true hallucinations may occur within the limit of previous ganglionic audible registration of sounds, and these more or less accurately described by the subsequent hallucinant; and so also with all the other senses. We have illustrations of these in the lives of eminent persons, and in none more so than in the person of that great musical prodigy and composer, Beethoven, who composed his greatest works after he was unable to hear the sound of a cannon."

THERAPEUTICS: ITS PRINCIPLES AND PRACTICE. By H. C. Wood, M. D., LL. D., Professor of Materia Medica and Therapeutics, and Clinical Professor of Diseases of the Nervous System in the University of Pennsylvania. Seventh edition, rearranged, rewritten and enlarged. 908 large octavo pages, cloth, \$6.00. Philadelphia: J. B. Lippincott Company. London: 10 Henrietta Street.

This is (in the correctly-chosen language of the author) "a work on medical agencies, drugs and poisons, with especial reference to their relations between physiology and clinical medicine."

The speedy exhaustion of successive editions of this treatise upon therapeutics has stimulated him to render it worthy of the kind judgment and continued favor of his co-laborers by incorporating in this edition the most recent researches in what is probably now one of the most active branches of medical science.

Scarcely three years have elapsed since the appearance of the sixth edition, yet the present volume contains ample new matter to justify its appearing.

In preceding editions of this book the demand for this sort of knowledge was in part met by a discussion of the application of the various forces of nature to the relief of human ailments.

In the present volume this formerly second portion of the book has been made the first, and its scope has been much extended, so as to take into consideration, besides various miscellaneous remedial measures, massage, metallotherapy, the feeding of the sick, and the dietetic and general treatment of underlying bodily constitutional states or diatheses, such as exhaustion, obesity, and lithiasis.

The best and most advanced part of the book is the twenty-six pages devoted to electricity as a therapeutic agent, and the valuable topographical neuromotor charts for illustrating the local employment of neurotherapy, to be found in the Appendix and for the first time (to our knowledge) introduced in any American work on general therapeutics.

The discussion of the properties of remedies is temperate and judicious, and enlightened by the advanced laboratory research and clinical knowledge of the day. They are classed as "Systemic" and "Extraneous" Remedies—two Classes, "General" and "Local" System Remedies; these

are divided into "Nervines," "Cardiants" and "Nutrients," "Antispasmodics," "Anæsthetics," "Somnifacients," "Delirifacients," "Excitomotors," and "Depresso-motors;" "Cardiac Stimulants," and "Cardiac Depressants," "Astringents," "Tonics," "Alterants," "Antiperiodics," "Antipyretics" and "Nutrients."

The "Local Remedies" are: "Stomachics," "Emetics," "Cathartics," "Diuretics," "Diaphoretics," "Expectorants," "Emmenagogues," "Oxytoxics," Sialogues," "Errhines," "Epispastics," "Rubefacients," "Escharotics," "Demulcents," "Emollients," "Diluents," "Protectives."

Division II., "Extraneous Remedies," consists of: "Antacids,"

"Anthelmintics," "Digestants," "Absorbents," "Disinfectants," etc.
The new medicines discussed are: "Hydrastin, Strophanthus, Spar-

The new medicines discussed are: "Hydrastin, Strophanthus, Sparteine, Adonidine, Iodol, Icthyol, Paraldehyde, Urethran, Hypnone, Amyline, Hydroli, Methylal, Kawa, Papain, Antifebrine, Salol, Bethol, Thallin," etc., etc.

The Treatment of Corpulence, Pyrexia, the Feeding of the Sick, and Massage, are excellent chapters, and will amply repay the reader for his expenditure of time and money.

THE CANADA MEDICAL RECORD; a Monthly Journal of Medicine, Surgery and Pharmacy.

The October number of the Canada Medical Record commences the seventeenth year of its issue. The Record is now published by the Herald Company of Montreal, and subscribers will find in it, each month, fresh and readable records of medical and surgical progress, with original articles by prominent practitioners and extracts from the latest medical literature of the day.

The editorial departments will be under the charge of A. Lapthorn Smith, B. A., M. D., M. R. C. S., Eng., P. O. S., London; F. Wayland Campbell, M. A., M. D., L. R. C. S., London; with Rollo Campbell, C. M., M. D., as assistant-editor.

The Record will be issued on the 15th of each month, and any irregularity in delivery will receive the prompt attention of its publishers.

The amount of subscription is \$2.00 per annum, payable strictly in advance. You will, therefore, confer a favor by remitting to the Herald Company, No. 6 Beaver Hall Hill, Montreal.

ALCOHOLIC INEBRIETY, AS RELATED TO RESPONSIBILITY AND CRIMINAL JURISPRUDENCE. By T. L. Wright, M. D., of Bellefontaine, Ohio.

"Researches relating to the effects of habitual drunkenness on the structure of the heart and blood-vessels, and the known connection which often exists between heart disease and insanity—especially described by Dr. Wm. Julius Mickle in his recent Goulstonian lectures—open a door for investigating the influence of inebriety upon the mental and moral movements. That the heart is very likely to become dilated in the habitual drunkard, when its pulsations increase in frequency from seventy beats per minute to at least eighty-five per minute as a stated thing, is apparent. For the latter figures represent an extra and unnatural labor imposed upon the heart of nearly 8,000,000 of beats per year—a change of heart-

beat from 36,000,000 to 44,000,000, in round numbers, per annum. And that the large arteries also must sympathize and suffer with the heart is evident, for they necessarily become enlarged, lax and bagging, as their tonicity and elasticity are gradually weakened or destroyed by constant and violent stretching. Of course such a state of the circulation, at one time strained and overwrought, at another powerless and creeping, but with a heart-beat always rapid, favors the advent of melancholy moods, leading to despondency and suicidal insanity.

"The anæsthetic, the benumbing, the paralyzing influence of alcohol upon the nervous system, and especially upon common sensation, always darkens knowledge and misleads the judgment. This follows from the fact that accurate perceptions are wholly dependent upon definite and normal sensations. When the senses are disturbed and impaired, perceptions are correspondingly disturbed and impaired; and they are unable to present to the mind facts as they truly are, as they really exist in the sur-The fine shadows, and uncertainties and doubts, which invariably attend all human transactions, escape the notice of a man who is intoxicated; and being unperceived by him, he imagines they do not exist. Everything has, to his mind, the quality and energy of absolute demonstration. He never hesitates-never doubts. He is therefore a bad, as well as a dangerous witness in a court of justice, and particularly in criminal proceedings, where he is very likely to appear: bad from defective knowledge, and dangerous from a morbid positiveness in conviction and assertion. It seems probable, indeed, that a drunken witness testifying as to events observed while sober, is more trustworthy than a sober witness testifying as to events observed while intoxicated.

"The drunken man is always in a state of partial anæsthesia. * * * The sense of feeling in such an individual is benumbed, and he seizes the person of anyone near him in a rude and rough manner. His touch, or rather his grasp, is painful because it is violent. The inebriate unconsciously exerts a considerable degree of force in his movements in order that he may be assured, or may feel that he really is in contact with per-

sons or things exterior to him.

"This imperfection in the sense of touch is one of the indications of partial paralysis in the nervous system at large. Indeed, the general insensibility of nerve arising from acoholic influence will become apparent upon a very superficial investigation. The muscular sense is greatly obtunded, as is evinced by the staggering gait, the impeded articulation, the unfixed eye and the distorted countenance. The senses of sight, of hearing, and even taste and smell, likewise show evidences of disturbed and restricted function in various forms of illusion, hallucination and incapacity. Partial paralysis depresses the ordinary senses without exception when they are brought under the dominion of alcoholic liquors.

"Paralysis, in whatever degree it exists, withdraws function in a cor-

responding degree from the control of volition."

These extracts show the author's attidude on the subject of the psychical impairment of alcohol.

Dr. Wright has written a good many good articles on this and kindred

subjects well worthy of the consideration of the student of psychiatry, and of the author of "Inebrism," which even those who do not concur with the author's conclusions, in toto, may read with pleasure and profit.

REPORT ON HYDROPHOBIA. By Charles W. Dulles, M. D., of Philadelphia.

The result of Pasteur's operations, the writer says, may be gathered from a report of Dr. Dujardin-Beaumetz on the subject of hydrophobia in Paris, during 1887, published in the *Gazette Hebdomadaire* of March 9, 1888.

According to this report, there were nine deaths from hydrophobia in Paris during that year, which was more than in 1880, 1883, 1884, or 1886. Five of these deaths were of persons less than fifteen years old. In one of the cases the patient was not bitten at all, but was simply licked on an abraded spot. Eight of the patients were bitten by dogs and one by a cat. Two of the nine patients had been treated by Pasteur; and their death is explained by Dujardin-Beaumetz on the ground that his method was not thoroughly carried out. The total number of persons treated by Pasteur was only 306 persons from Paris, bitten by dogs supposed to be rabid, as against about 300 a month when I last addressed you.

This statement (says the author) is, "that the application of Pasteur's method has had no effect in reducing the usual mortality from so-called hydrophobia in Paris," and "that, in spite of the artificial stimulus furnished by the French reception of Pasteur's method, the number of those who fall into the terror of hydrophobia is diminishing in France."

Dr. Dulies thinks there is a great significance in the fact that disbelief in the theories of Pasteur has been found to go with a singular immunity from the ravages of so-called hydrophobia, and that the degree of acceptance of Pasteur's theories in any country will furnish a measure of the number of cases and deaths from hydrophobia. From the whole of the United States Dr. Dulles has gathered only fourteen deaths (about one in each 4,000,000 inhabitants) from hydrophobia since 1866. He prepared an epitome of the history of each, for which we have not space, and concludes with an expression of his belief that hydrophobia will follow the belief in witchcraft and die out as that did, a very optimistic view considering the gravity of the facts as we undoubtedly see them in connection with this fatal malady.

MEDICAL AND SURGICAL HISTORY OF THE WAR OF THE REBELLION Part Third Medical Volume. Surgeon-General's Office.

This is one of the most interesting and instructive to the general Practioner of Medicine, of the series of valuable and entertaining medical war histories. In it the continued fevers are well discussed and their pathological anatomy and pathology elaborately and beautifully portrayed. The pigmentation of the ileum in camp fevers, the ulceration, perforation and cicatrization of the region of Pryer's patches and the microscopic appearance of the matter found in the ileum, the thickening and sloughing portrayed, constitute an entertaining study for clinician and pathologist.

The whole report on this and the other subjects—hæmoptysis, venereal diseases, ophthalmia, idiopathic peritonitis, headache, neuralgia,

hæpatic inflammation, the construction of hospitals, etc., carries us back to the days of our service in the army over familiar ground; and the writers in this valuable volume have evidently all "been there," and know practically the subjects whereof they treat.

The only subject that mars the beauty of the record is the unfortunate and fatal experience of the Union soldiers at Andersonville, and the humanity of our noble profession stands out conspicuously there, on both the Confederate and Union side, as it has ever stood, in the annals of human history whenever it has had a fair chance, at the relief of human suffering.

Transactions of the Association of American Physicians for 1886 and 1887. We acknowledge receipt of Vol. II., through courtesy of William Osler, M. D., Recorder, 1502 Walnut Street, Philadelphia.

The papers of most interest to the readers of this journal are those by Wood, Seguin and Putnam respectively, on "The Antipyretic Treatment of Fever," "The Study of Localized Cerebral Lesions," and on "Cutaneous Points in the Symptomatology of Chronic Lead Poisoning." All, however, are valuable, and our readers will wish to read them.

I. E. Atkinson discusses, in an instructive manner, "Forms of Typhoid Simulating Remittent Malarial Fever," an always interesting subject. Pepper and Griffith burst the Bergen gas balloon. Welch and Osler contribute two good papers on "Hemorrhagic Infarction." I. T. Dana presents "A Case of Aneurism of the Aorta." Hein discusses "Sewer Gas Poisoning;" Minot, "Antipyrine and Thallin in Typhoid;" Billings, "Methods of Research in Medical Literature;" Guetiras, "Direct Functional Murmurs, Etc.;" and Howard, "Hepatic Cirrhosis of Children."

Vol. III. also received.

The Transactions of the Colorado State Medical Society, Eighteenth Annual Convention, held at Colorado Springs, June, 1888, are before us, bound with the Constitution and By-Laws and List of Members. The papers are all creditable to their respective authors, the three papers of most interest to the readers of this journal being those of Dr. J. T. Eskridge, of Colorado Springs, on "Certain Localized Lesions of the Brain;" "Surgical Drainage," by Dr. W. R. Whitehead, of Denver; and "Surgical Lesions of the Brain, and Its Envelope," by Dr. W. M. Strickler, of Colorado Springs. Dr. Saml. A. Fisk's paper on "Arsenical Paralysis" will well repay perusal, as well as the contribution of Dr. Lay, on "The Therapeutics of Fever, the President's Address, and the concluding papers on "Eye Diseases of Colorado," and "Eye Diseases Arising from Errors of Refraction," by Dr. Rivers and Dr. Mayfield respectively.

ELECTRICITY vs. TAIT; OR THE USE OF ELECTRICITY IN INFLAMMA-TION AS FOUND IN GYNECOLOGY. By Geo. T. Hulbert, M. D., late Superintendent of Female Hospital, St. Louis.

Dr. Hulbert belongs to that increasing class of advanced and advancing gynecological writers and workers who live and labor not alone to mutilate woman but to save all her parts where salvation is possible, compatible with health.

The time is coming when to mutilate a woman and unsex her will be no more permissible than to cut a man for otherwise curable disease; and the golden rule in surgery of the sex will reign triumphant. The paper is good reading and expresses sound therapeutics for the sex.

BELOW SEA-LEVEL—NATURE'S PNEUMATIC CABINET, and HIGH ALTITUDES OF SOUTHERN CALIFORNIA. By Walter Lindley, M. D., Vice-President of the State Medical Society of California; Professor of Obstetrics in the Medical College of the University of Southern California, Los Angeles.

Extremes in Altitude in Southern California.

It is gratifying to find our California friends in the profession who are competent to write well, doing for the Pacific Coast States what Denison, Eskridge and others have done for Colorado. The Climatology of the Farther West is of great professional interest.

THE PREFERABLE CLIMATE FOR PHTHISIS; or, the Comparative Importance of Different Climatic Attributes in the Arrest of Chronic Pulmonary Diseases. By Charles Denison, A. M., M. D., Professor of Diseases of the Chest and of Climatology, Medical Department, University of Denver; author of "The Rocky Mountain Health Resorts," and "The Annual and Seasonal Climatic Charts of the United States."

Few men in the country are better qualified to discuss, or succeed better, in presenting the subject on its therapeutic aspects, than Dr. Denison.

THE CASE OF THE EMPEROR FREDERICK III. Full Official Report by the German Physicians and Sir Morell Mackenzie. The German Report translated by Henry Schweig, M. D., New York. This is the only edition giving the unabridged reports, with all of the illustrations, of Sir Morell Mackenzie and of the German Physicians. Cloth, \$1.25; paper, 75 cents.

Address the publisher, Edgar S. Werner, 48 University Place, New York. Be sure to order the Werner edition.

Some Problems of Mental Action—Annual Address. By Richard Gundry, M. D., Medical Superintendent of the Maryland Hospital for the Insane; Professor of Materia Medica, Therapeutics, and Mental Diseases, College of Physicians and Surgeons of Baltimore.

This address gives, in Dr. Gundry's usual happy and convincing style, the influence of hereditary neuropathological endowment, and of adverse and favorable environment during neuropsychic evolution.

THE UNIVERSITY MEDICAL MAGAZINE is a new and meritorious monthly, editorially conducted by the faculty of the University of Penusyivania. The number before us sustains the well-known ability of its editorial staff and is no discredit to the fair fame of the old and influential institution of medical education they represent. All alumni of the University will be especially interested in this evidence of vigorous life in their old alma mater.

FUNCTIONS OF A SCHOOL FOR FEEBLE-MINDED. By A. C. Rogers, M. D., of Minnesota.

Dr. Rogers, in this little monograph, presents, in a succinct and convincing manner, the needs and functions of such an institution. We

commend his paper to all State authorities where these institutions are located and to all States like Missouri, which, though they have no such school, ought to have one.

FIRE-PROOF PUBLIC BUILDINGS. An article by Edward Atkinson, on "Slow-Burning Construction," in the February Century (advance sheet), claims that if a sum of money equal to that which is annually paid in premiums for policies of insurance on property situated within the so-called "dry goods district" of New York and its immediate vicinity, covering about one hundred acres, were put at the disposal of the officers, engineers and architects who are employed by the factory mutual insurance companies of New England, to be by them applied to suitable appliances and safeguards for the protection of that district, the danger of a great conflagration would be wholly removed and the destruction of even a single warehouse and its contents would be of the rarest occurrence.

"Some of the worst examples of combustible architecture," it states, "are to be found among our prisons, hospitals, asylums and almshouses; next, among college buildings, libraries and scool-houses; to these may be added churches, hotels and theaters. In the year 1887, according to the tables compiled by the *Chronicle*, of New York, there were burned within

the limits of the United States:

45 hospitals, asylums, almshouses or jails, being nearly four per month, in many cases accompanied by the loss of a large number of lives.

126 college buildings and libraries, being ten and a half per month.

146 churches, being two and eight-tenths per week.

52 theatres and opera houses, being one per week.

515 hotels, being one and four-tenths per day.

MELANCHOLIA AND ITS CAUSATION; with Some Suggestions Relating to the Prevention of Insanity. By Dr. Jamin Strong, Superintendent of the Cleveland Asylum for the Insane.

Written in Dr.S.'s usually happy and always strong and vigorous style. There is nothing melancholic about the author but his subject.

DISEASES OF THE LIVER. By Prof. Dujardin-Beaumetz, Member of Academy of Medicine, etc.; Editor of the Bulletin Général de Thérapeutique, Paris. Translated from the fifth French edition by E. P. Hurd, M. D., Newburyport, Mass. 185 pages, paper, 25 cents; cloth. 50 cents. The "Physicians' Leisure Library." Geo. S. Davis, Publisher, Detroit.

THE THEORY AND PRACTICE OF THE OPHTHALMOSCOPE. By J. Herbert (laiborne, Jr., M. D., Instructor in Ophthalmology in the New York Polyclinic. "Physicians' Leisure Library." Paper, 77 pages, 25 cents. George S. Davis, publisher, Detroit, Mich. The book is well illustrated, clearly printed and compact in form.

Two Cases of Gunshot Wound of the Abdomen, Illustrating the use of Rectal Insufflation with Hydrogen Gas as a Diagnostic Measure. By N. Senn, M. D., Ph. D., of Milwaukee, Wisconsin; Attending Surgeon to

the Milwaukee Hospital; Professor of Principles of Surgery and Surgical Pathology in the Rush Medical College, Chicago.

Inflation of the Stomach with Hydrogen Gas in the Diagnosis of Wounds and Perforations of this Organ, with the Report of a Case. By N. Senn, M. D., Ph. D., of Milwaukee, Wisconsin.

Anatomischer, Befund bei einer diphtherischen Lähmung. Aus dem Laboratorium des Prof. Dr. Mendel in Berlin. Von Dr. William C. Kraus aus Attica (New York). Separat-Abdruck aus "Neurologisches Centralblatt."

Electrolysis; Its Value in Diagnosis as well as in Treatment of Intra-Abdominal and Intra-Pelvic Tumors by the Aid of a New Instrument. By Eugene C. Gehrung, M. D., of St. Louis.

Transactions. Medico-Legal Society, April Session. Presidency of Clark Bell, Esq.

New Series of Metric Test-Letters and Words for Determining the Amount and Range of Accommodation.

Suicide and Legislation. By Clark Bell, Esq., President of the Medico-Legal Society of New York.

The Contagiousness of Phthisis (Tubercular Pulmonitis). By Lawrence F. Flick, M. D., of Philadelphia.

The Diseases of the Nose and Pharynx, and their Treatment. By W. Cheatham, M. D., Louisville, Ky.

Notice for 1889. Lindsay & Blakiston's Physicians' Visiting List. P. Blakiston & Co., 1012 Walnut Street, Philadelphia.

Bulletin de la Société de Médecine Mentale, de Belgique, Année 1888, No. 50.

Report of a Case of Exomphalus. By W. B. Dorsett, M. D., St. Louis, Superintendent St. Louis Female Hospital.

Consequences of Acute Suppuration of the Middle Ear, with Special Reference to Opening the Mastoid. By A. R. Baker, M. D., Cleveland, O.



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No. 2

ORIGINAL CONTRIBUTIONS.

CEREBRAL TUMORS.*

By Doctor G. Seppilli, of Imola, Italy.

In the October number of the ALIENIST AND NEUROLO-GIST we presented a brief notice of the above valuable publication. It consists of eleven chapters, corresponding to the various portions of the brain in which tumors have been found. We have selected for present reproduction that in which tumors of the cerebellum are treated of, not because of its superiority to the others, but rather because its extent best comports with our available space, and with the fact that not a few of our readers must have had opportunities for clinical and necroscopical observance of this very interesting form. We should very gladly quote largely from the introductory portion of the work, treating of the general subject of cerebral tumors, but under present circumstances we are constrained to deny ourselves this pleasure.

TUMORS OF THE CEREBELLUM.

The essential and most characteristic symptom which distinguishes neoplasms of the cerebellum is the so-called ataxia, or cerebellar titubation, which, as Federici, the

^{*} Translated by JOSEPH WORKMAN, M. D., Toronto, Canada.

illustrious clinicist of Florence, states, so well establishes the diagnosis of seat, that it cannot be regarded, as to certainty, inferior to the physical symptoms due to changes in the respiratory organs. Cerebellar ataxy is thus characterized; whilst the patients keep the horizontal posture they execute with energy, and sometimes with regularity, any movement whatever of the extremities, and they have a clear perception of their position. In the erect position they usually keep their legs distant from each other, and if they bring them closer they lose balance and are very apt to fall. If they try to walk, they feel insecure, sway from side to side, and almost at every step they halt to regain bodily equilibrium. They threaten to fall forward, backward, or to one side. In such cases there is therefore not paralysis of voluntary motion, but, on the contrary, absence of co-ordination of those movements which are indispenable to bodily equilibrium, whether in the erect position or in walking. Instead of the steady physiological equilibrium, there is one eminently unsteady (Jacoud).

It is not here our purpose to detail the various explanations that, from the time of Flourens down, have been given of cerebellar ataxia. Let it suffice simply to say that its existence, as a general rule, seems to indicate that the neoplasm, either directly or indirectly is injuring the vermes or the median lobe of the cerebellum. Of this diagnostic precept, first announced by Nothnagel, and afterwards confirmed by others, (Rosenthal and Jackson,) we find proof in the numerous cases of cerebellar neoplasm gathered from the latest literature. We therefore believe it useful to relate them, because, when conjoined with those which we shall afterwards report, they will serve to render clearer and more complete the morbid depiction of the cerebellar tumors which we desire to describe.

Rosenthal's Case. A young man aged 18. For six months past he had occipital headache, vertigo, frequent vomiting, obscured sight, pain from pressure on the occiput; right facial paresis, amblyopia with optic neuritis.

buzzing in the right ear, staggering. Three days before death contracture in the neck, with stupor. In the postero-superior and internal portion of the right cerebellar hemisphere there was found a tumor (mixo-glioma) as large as a pullet's egg; it extended to the vermes. The medulla oblongata was flattened by it.

Weber. A man aged 30. In December, 1876, he had vertigo and headache which became more intense in the following May. There was no paralysis nor any psychical disturbance up to death. His pupils were normal. Slight diminution of sensibilty in the legs, and a very slight in-coordination in the hands, with tremulous movements, was observed. He walked with considerable speed, with the head inclined forward, as if he was about to fall; he deviated towards the left, and struck objects in passing. When he leaned on something he got on better, without running, but with effort, as if his legs had become tired or painful. Under the ophthalmoscope the vessels appeared turbid, and the papillæ were indistinct,-vomiting frequent. On the 18th of September death occurred after severe attacks of general spasms. On the upper surface of the cerebellum and on the median line, over a space about an inch in diameter, there was a notable thickening of the pia mater with adherence of a tumor which was totally embedded in the cerebellum, situate more towards the right than towards the left of the median line.

Ferber. A man of 20 years. From January, 1872, he had periodic vertigo; in March following, paroxysmal pains in the occiput, to which was added frequent vomiting in the winter. In June, 1873, he had pains in the occiput which spread to the extremities, and became very severe. There was a slight hyperæmia of the pupils. Vertigo was persistent. Walking very tottering. On closing the eyes he fell forward. There was no phenomenon of irritation, nor any paralysis of motion. Nothing abnormal in sensibility. Psychical state intact. Coma and sudden death.—A median section along the superior vermes exposed a cyst filled with liquid, which permitted sight of a very thin

wall, and presented in its anterior part, on the left, a neoformation of the size of a bean, (gliosarcoma). The cyst did not connect with the fourth ventricle; its greatest diameter was 4 c. m. and its floor was formed by the inferior vermes.

Nothnagel. A woman of 30 years. In August, 1876, a sense of vertigo and frequent staggering, without falling. In September severe occipital headache, nausea, vomiting, noises in the ears. In October, intellect normal; pains almost constant in the occiput. Dorsal decubitus persistent, because when she rose up she was seized with vertigo and vomiting. The motions of the upper extremities, the eyes, the face and the tongue, normal. In bed all the movements of the legs, prompt and exact, even with the eyes closed. She can walk, if supported, but if not, she staggers badly; has vertigo and vomiting, and she falls. No disturbance of general or specific sensibility. This state lasted into November. From the end of December she was subject to epileptiform convulsions, and she died on the 18th of January, 1877.—The hemispheres of the cerebellum were, on the outside, of normal size and consistence, with exception of a limited space (larger on the right than on the left) on each side, corresponding to the upper, anterior and inner part of the quadrangular lobe, which had a yellowish color and was very soft. On cutting this part it was found to hold a neoplasm (gliosarcoma) on the right, of about the size of a filbert nut. The largest neoplastic mass was located in the anterior half of the vermes.

Heimpel. A woman of 17 years. For several years past her gait had been uncertain; she was obliged to lean against the wall and she frequently fell. No paralysis. After violent occipital headache, vomiting.—A tumor (cystodermoid) of the form and size of a uterus, at the base of the cerebellum, between the two hemispheres. Destruction of almost the whole of the inferior vermes.

Jackson. A man of 35 years. In January, 1879, he complained of stiffness in the neck, when he was writing;

it became suddenly tense and painful, and prevented him from stooping over his desk. These attacks occurred very irregularly. In July he perceived his feet wabbling when he walked, and his sight was hazy. On the 30th August he had double optic neuritis with weakness of vision; the other special senses were normal. His head was constantly bent backwards, and sometimes he had paroxysms of strong opisthotonis which lasted from two to three minutes. On the 25th of September he had a severe attack, during which stretching of the extremities, great retraction of the head, and opisthotonis were observed, and nystagmus also was noticed. He could walk, but he staggered, vomiting sometimes. No diminution of muscular force. He died on the 11th of October. There was a cystic sarcoma of the size of a walnut, in the inner part of the left lobe of the cerebellum, and also extending to the median lobe.

Dreschfeld. A young man of 19 years. In September, 1877, headache and optic neuritis, followed by vertigo and uncertain gait, impossibility of walking with the eyes shut, vomiting, epileptic convulsions. In the last three months of life inferior paraplegia, and in the last month complete blindness and deafness. Died 9th December, 1886.—A tumor which occupied the region of the upper vermes, and pressed forward on the cerebral peduncles.

Martineau. A man of 60 years. Headache for two or three months past, without loss of consciousness, and without convulsions or vomiting; disphagia for liquids, voluntary motility conserved, but defect of co-ordination of movements. He could not walk alone, he frequently fell. Pupils normal, likewise sensibility and intelligence.— A tumor of the size of a walnut in the median lobe.

Lanzoni. A man of 28 years. For two years past intermittent occipital headache; afterwards he began to walk like a drunken man; he had vomiting, difficulty in pronouncing and inclination of the head forward. On the 14th of December, 1874, he presented irregular pulse. Respiration of Cheyne-Stokes, fixed intolerable pain in

the occiput, tongue deviating to left, difficult deglutition and speech, no paralysis of motion, or of sense, in the extremities. Walk tottering, intellect sound. (?) His urine showed some albumen. These symptoms continued until death, on 29th December.—A tumor (neuroma) situate between the lobule of the inferior vermes and the tonsillæ, as large as a hen's egg and consistent. It had no relation with the limitrophic parts besides that of simple contact.

Federici. A woman of 28 years. On the eighth day of her lying-in she was seized, after ill-treatment, with shiverings, tremors, fever, delirium, somnolence, vomiting and headache. The fever ceased after some time: there remained pain in the head in front and in the neck, frequent vertigo, vomiting and tremor, to which were added an incessant whizzing in both ears and such a disturbance of vison that in trying to fix her eyes on any object it suddenly presented a whirling motion and greatly distressed her. Examinations made on the 23rd of November and on succeeding days gave the following results:-Her walk was uncertain with the legs wide apart, and she readily lost her equilibrium. Sensibility exquisite. Hearing duller on the right than on the left. Sight hazy and much diminished. Hemorrhagic spots very numerous in the fundus of each eye, with neuro-retinitis. Nystagmus. Vertigoes, general convulsions, followed usually by respiration of the Cheyne-Stokes type.—December 20th, right facial paralysis, blindness.

From January to May, when she died, besides the incessant pain in the forehead and the neck, an extraordinary frequency of convulsions and vomiting was observed, and a clouding of intellect; sensibility normal, isolate movements of her members regular.—Autopsy.—In the right cerebellar hemisphere was found a part of the amygdala and of the floccus, transformed into a neoplastic mass (fasciolate sarcoma), as large as a walnut; it was placed with its internal surface laid against the bulb, which was thereby driven towards the left lobe. The inferior vermes

was turned from one hemisphere over on the other. The right median peduncle and the left cerebellar hemisphere were compressed. The tumor occupied also the anterior part of the quadrate lobe. The lobules of the superior vermes were no longer distinguishable. The tumor invested and pressed the seventh pair on the right.

Curschmann. Papilloma of the anterior vermes, with only disorder of movements, without any weakening whatever of force.

Capozzi. A boy of II years. For four or five months past, paroxysmal head pain, and vomiting after with vertigo. Clouded vision. Walked as if drunk and readily fell. Single movements free. Dolorific and thermal sensibility intact; tactile weakened. Sudden death after violent head pain.—A hard resisting tubercular tumor, the size of a filbert nut, corresponding to the vermes, above the fourth ventricle.

Though the existence of cerebellar ataxy is a sign of lesion of the vermes, our failure to observe it does not imply the soundness of the vermes. There may be neoplasms of the vermes without any symptoms of motor co-ordination. Thus, in a man of 26 years, who had presented only headache and vomiting, Gintrac found a tumor implanted on the upper surface of the cerebellum, corresponding to the region of the superior vermes. In three cases, described by leger, cerebellar ataxy was not observed,-though in one of them there was a cysto-sarcoma in the median lobe and the lateral lobes of the cerebellum; in another there was a tubercle in the upper and the lower vermes, and in the third a glioma in correspondence with the thalamus opticus. the corpora quadragemina and the anterior part of the upper vermes. In a man who complained of acute pains in the head and neck and showed slow but ordinate walking, Balzer found two tubercular tumors, one of which was of the size of a walnut, situate on the median line; it occupied the right lobe, and it was continuous upwards and on both sides with the white substance, below and behind with the gray substance of the inferior vermes; the other one occupied the external part of the left lobe.

But these cases of neoplasm with lesion of the vermes without cerebellar ataxy do not invalidate what we have before said, for they are very few in comparison with those in which ataxic symptoms were presented, and they very probably depended on a greater or less part of the vermes being left intact, or on the slow course of the neoplasm (Nothnagel). That the disturbances of co-ordination in neoplasms of the cerebellum depend on lesion of the vermes, and not of other parts of the organ, would appear to result from the fact that in the cases of Dreschfeld, Curschmann, Capozzi and Martineau, in which ataxy was present, the tumor included the vermes only.

Cerebellar ataxy is wanting when the tumor is confined to but one of the cerebellar hemispheres, and does not act on the median lobe. The following cases support this rule:

Nothnagel. No symptoms. A circumscribed tuberculous deposit of the size of a pea, in the medullary substance of the quadrangular lobe of the right cerebellum.

Idem. A phthisical patient who died of tuberculous meningitis; cerebral symptoms only a few days before death. An old tubercular node, casified in its centre, of the size of a pea, in the upper semilunar lobe of the left cerebellar hemisphere.

Andral. A boy of 10 years. No brain symptoms.—Four tubercles in the left cerebellar hemisphere.

Ebstein. A woman of 40 years. No morbid symptoms during life. Death in coma. The left cerebellar hemisphere of normal volume and equal to the right. In the middle of the former there was found a tumor, surrounded by periosteum, of 0.1 to 0.2 m. m. thickness, and by connective tissue. It measured from right to left 4.5 centimeters, from front to rear 2.9, and from above down 3.2 c. m.; it was formed of osseous substance. Right vermes and hemisphere intact. No compression on the surrounding parts.

Steven. A woman of 31 years. Headache; vomiting

and anorexia a few weeks before death. Sarcoma as largeas a hen's egg in the left hemisphere of the cerebellum.

Scheuppel. A few months before death headache, retraction of the head backwards, vomiting, muscular debility.—Medullary sarcoma in the posterior gyrus of the right cerebellar hemisphere, 4 c. m. long, 5 broad, 2½ high.

Bosisio. A youth affected with occipital headache, amblyopia, epileptic convulsions. Absence of ataxia.—A cancerous tumor which proceeded from the middle of the inferior surface of the lobule of the left cerebellar hemisphere; it was lodged in the corresponding inferior occipital fossa, and in no relation with the pons or the bulb.

Frestal. A soldier, who showed no symptom but the one of pains limited to the occipital region and more severe in the night. At no time vertigo or tremor. Sight and hearing normal. Sudden death.—The inferior and posterior part of the left half of the cerebellum gave origin to a tumor as large as a walnut.

Jackson. A tumor in each lateral lobe of the cerebellum of a man, who, fourteen days before death, had not presented any symptom excepting paralysis of one arm, which was ascribable to another tumor in the upper part of the frontal convolutions.

Cerebellar ataxia is also frequently exhibited when the neoplasm is seated in the hemispheres of the cerebellum; but in such cases we should hold that its action falls on the surrounding parts, and hence, on the vermes, for, as has been stated, lesions of this part alone give place to disturbances of co-ordination. In some cases of tumors situated in one hemisphere and accompanied by defects of motor co-ordination, we have observed that frequent mention is made of softening of surrounding tissue, or of such a size of the neoplasm that compression of the vermes was inevitable.

Thus, for example, in a case by Legrand, there wasobserved uncertain, staggering walking (tubercle in the right hemisphere, with surrounding softening); in one by Fott, tumor tubercular as large as an apple, (but how big the apple?) in the right cerebellar hemisphere, which compressed the right sinus; and in one by Federici (cyst of the size of a small pullet egg, in the right quadrilateral lobe, which had compressed and wasted the middle peduncle). Also in a case by Ferrier, there were observed among the morbid phenomena a feeling of vertigo, unsteady equilibrium, both in standing and walking, a special sensation which constrained the patient to turn to the left, an inconvenience which he tried to control by inclining to the right. At the autopsy a large tumor was found under the inferior face of the left cerebellar lobe, which had been pushed upwards and backwards. The tumor had displaced to the right the pons and the bulb, and had stretched and flattened the middle cerebellar peduncle.

Besides the ataxic phenomena which are very frequent in neoplasms of the cerebellum, other disorders of motility of a paralytic and irritative nature may be presented.

Hemiplegia and hemiparesis of the extremities are rare. Cubach, in eighty-two cases of tuberculosis of the cerebellum met with only nine such. In thirty-two cases of tumors of the cerebellum, collected by Ferber, from the literature of the last ten years, paralysis of the extremities was observed in but a few. In the many cases of cerebellar neoplasm, which we have examined in the most recent medical literature, we have found very rarely mentioned paralysis of the extremities of one side, now direct, or again crossed. We hold that paralysis of the limbs does not depend on lesion proper of the cerebellum, for if so it should be met with far more frequently. On the contrary it is almost always found that the pons or the bulb, and sometimes the cerebral peduncles, are displaced, compressed, softened, or that there is lesion of the cerebrum or of the spinal medulla (Jackson.) In a case described by Hubrich, in which, besides headache and vomiting, there was paralysis of both extremities on the right, and of the leg on the left side, with disordered sensibility, a glioma was found which had originated in the floccus and the left tonsil of the cerebellum, and had displaced the bulb towards the right and pressed it against the right wall of the vertebral canal, and driven the middle peduncle and the half of the pons of the left forward, and the pyramid on the left was atrophied by the great pressure.

Burnett found, in a man who had been affected with headache, vomiting, left hemiplegia of both extremities, and paresis and anesthesia of the right half of the face, a sarcoma of the right inferior half of the cerebellum, which extended to the pons; it was 3 c. m. in diameter and 2.6 c. m. thick; it had compressed all the cerebral nerves of the right side of the bulb as far as the third pair. Buressi found a fibrous tumor which had originated from the dura mater, and had hollowed out a niche in the anterior half of the left cerebellar lobe, in a man who had been subject to recurrent pains in the neck and along the vertebral column, also hemiparesis of motion, at first in the left limbs, and afterward in a less degree in the right. But in the report of the autopsy we read that the medulla spinalis appeared wasted and somewhat softened in the lower one-third of the dorsal region, and many nerve fibres were seen, but very few cells and numerous fat droplets.

Direct and crossed hemipareses in cerebral neoplasms are due perhaps to their relation with the pyramids, that is to say, according as their action is felt above or below the crossing of the nervous fibres, that takes place in the pyramids, or according to the varying manner of crossing of the pyramidal fibres.

To the opinion now expressed, that the paralysis of the extremities in neoplasms of the cerebellum does not depend on the lesion in this organ, but rather on that of the neighboring parts, it may be objected that in some cases of cerebellar neoplasm there were also lesions of the parts mentioned, and yet paralysis was absent, and that it may be present, in a few cases however, when a small neoplasm, at least apparently so, is limited to the cerebellum. The first objection finds explanation in the general law already so many times mentioned, that neoplasms may injure parts destined to functions of motion without these

appearing outwardly to be at all deranged. A sufficient explanation of the second objection, as Nothnagel states, is not possible, so long as pertinent observations may remain uncollected and unstudied.

What has been said of hemiplegia of the extremities may be equally applicable to the paraplegia which sometimes accompanies cerebellar neoplasms, that is to say, it may be regarded as of spinal origin. Fox found, in a woman of 45 years who had suffered, in addition to headache and vomiting, difficulty in walking and afterwards complete paraplegia, a glioma implanted in the anterior lobe of the left hemisphere of the cerebellum, and at the same time a hyperplasia of the connective tissue of the spinal medulla, especially in correspondence with its dorsal portion. Rosenthal, in the case of a man affected with left facial paresis, deviation of the tongue to the left, stuttering, paralysis of motion and sense in the upper extremities, paresis in the lower and dysphagia, found a tumor as large as an apple at the base of the right cerebellar hemisphere, perforating the inner meninges and adhering tenaciously to the dura mater at the anterior part of the occipital foramen. The cervical paraplegia in this case was clearly due to the continuous pressure the neoplasm on the cervical portion of the spinal medulla.

A symptom pretty frequently observed, especially in the last period of the disease, is weakness of the muscular system, in consequence of which the patients, at every step taken and in every labor undertaken by them, are speedily tired and fatigued.

Paralysis of the cerebral nerves sometimes accompanies neoplasms of the cerebellum and more especially those of its inferior face. It is due to the direct action of the tumor on the nerves or to the meningitic processes. Paralysis of the facial is rare; besides having always the characters of peripheral paralysis, that is, of being diffused through all the branches of the nerve, it is located on the same side as the tumor. (Rosenthal, Burnett and Federici.)

Still more rare is paralysis of the motor nerves of the eye, (the abducens, trochlear, oculo-motor), and that of the tongue, which is due to compression of the pons, and is shown in disorders of speech in the form of anarthia. The articulation becomes slow, interrupted, stammering. Here we must not omit to remark that when, from its relations with the bulb, it gives place, in addition to the disorders of speech, also to embarrassed deglutition and alterations in the circulation and respiration, we may have a morbid representation very similar to that of bulbar paralysis, without those ataxic phenomena which might directly prove a lesion of the cerebellum (Rosenthal and Herbrich).

Irritative motor phenomena sometimes accompany neoplasms of the cerebellum. Thus we sometimes observe rigidity of the cervical, the spinal muscles, and the muscles of the extremities. According to Jackson this general rigidity, denominated "cerebellar," takes place when the neoplasm occupies the median lobe of the cerebellum. In this case attacks very similar to those of tetanus were The same has been stated by Mackenzie. observed. General epileptiform convulsions have been observed with a certain frequency, especially in the late periods of the disease, and they are sometimes the cause of death. Contractions, limited to the face and the extremities, are rare. These irritative phenomena do not proceed from the cerebellar lesion, but from its action on the neighboring parts (bulb, pons, peduncles).

A rather frequent phenomenon is *nystagmus*, which has by some been regarded as due to deficient or abolished co-ordination of the muscles of the eye, from disturbed cerebellar innervation. It is stated, however, that it is generally absent, when the action of the neoplasm is limited to the substance of the cerebellum, and the peduncles are exempt from it.

As regards disorders of the general sensibility we are able to affirm that in all the cases of neoplasm which

have affected only the lobes of the cerebellum, we have never noted them. It is however true that Andral observed, in four cases, an augmentation of the dolorific sensibility, but in three of these the tumor irritated the posterior fasces of the spinal medulla, and in the fourth there was an encephaloid tumor which occupied the right lobe of the cerebellum, and had produced, in the arm corresponding, a sensation of formication, with spasms. Luys, Leven and Nothnagel, who have been much occupied in the pathology of the cerebellum, are in accord in holding that the cutaneous sensibility is never altered when the morbid process is not diffused, or does not irritate the neighboring parts.

Thus too, in a few cases, a general insensibility has been observed, but only when a more or less profound state of coma existed. Hyperesthesia, or anesthesia, of the fifth pair, limited to one-half of the face corresponding to the side of the neoplasm, is more frequently observable.

All these different alterations in the sensibility of the skin should not therefore be regarded as the result of the lesion of the cerebellum, but on the contrary, the result of the irritation of the meninges, or better still, of the greater or less compression made by the neoplasm, alike on the spinal fibres and the fibres of the trigeminus, whose excitability becomes thus augmented, diminished or destroyed.

Of the special senses, that of sight presents the most frequent changes. These vary greatly in intensity, from a slight haziness up to complete blindness. In sixty cases of cerebellar tumor, Macabian found forty of disordered sight. Between these disturbances of sight and neoplasms of the cerebellum we are unable to recognize, as some have done, any special, immediate relation. We certainly have seen that disturbances of sight are also frequent with tumors of other parts of the brain. We must now add that these, as to clinical form, do not at all differ by reason of the cause that determines them, from those which accompany cases of cerebellar neoplasm since in these also there is observed at one time stasis

with atrophy of the optic papillæ, and at another neuroretinitis. That these alterations in the ocular fundus depend exclusively on augmented endocranial pressure, is inadmissible, from the fact that they may be wanting, or of so slight a degree, in cases of large tumors of the cerebellum which restrict the endocranial cavity, or which, having their seat on the upper posterior face of the cerebellum, compress the vena magna of Galen, and tend to produce internal hydrocephalus.

Griesinger attributes the frequency of visual disturbances, in cases of cerebellar tumors, to the vicinity of the corpora quadrigemina. This opinion cannot be accepted in a general way, for there have been cases of neoplasms situate on the posterior and inferior face of the cerebellum, which were nevertheless accompanied by amaurosis and amblyopia, and others in which the neoplasm had its seat on the median line of the superior face of the cerebellum, in the vicinity of the quadrigeminal tubercles, without observance of visual disturbances (Feber and Nothnagel).

In rare instances auditory disturbances are observed, which are manifested by tinnitus aurium, or by more or less complete deafness. These depend principally on compression of the acoustic, or lesion of its ganglion, or on the changed accommodative faculty of the muscles, for the tightening or relaxing of the membrane of the tympanum (Luys).

Among the most frequent and the earliest symptoms of cerebellar neoplasms, we must place vertigo, headache and vomiting. Vertigo has an essential value in the diagnosis, when it is accompanied by the ataxia before described by us. This does not always happen, as there are cases in which, vertigo is present, and ataxia absent, and others in which uncertain walking is seen without vertigo. The patients have the sensation of objects rotating about them, or, instead of this, of their bodies turning round, and the ground passing from beneath them. The vertigo in these cases is distinguished from that

which accompanies neoplasms in other parts of the brain, by its extraordinary intensity and persistency, and by its early appearance.

The headache usually becomes very intense, at one time continues, and at another intermittent. It is usually seated in the occipital region; sometimes, however, it is diffused, or at others limited to the frontal region or to one-half the head. Considering that this diversity of location of the headache is observed also in neoplasms of other parts of the brain, it follows that this symptom cannot be utilized for the establishment of the diagnosis of cerebral tumor. This malady may at least be suspected when the headache is constant, and is localized in the occiput.

The vomiting often appears during the attacks of violent headache, or, instead, when the patients, in changing from the horizontal to the vertical position, are struck with staggering and vertigo. Sometimes it is altogether wanting; in other instances it presents at a late period of the disease. Nothnagel observed a case of a tumor of the right hemisphere of the cerebellum in a man of 54 years, who had for three months suffered intense pains in the occiput, vertigo and cramps in the right arm. Vomiting came on seven weeks before death, which took place after epileptiform convulsions. Vomiting is to be regarded as of bulbar origin.

Disorders of the circulation and respiration have been noted, though not often, as the consequence of the action of the neoplasm on the bulb. The Cheyne-Stokes respiration was met with by Lanzoni and Federici. The latter explains it in his case by loss of excitability in the medulla oblongata, consequent on the continuous stimulations of it from the vomitings and the convulsions.

In the majority of cases the psychical faculties remain unchanged. It is only in an advanced period of the malady that there are observed in the patients, apathy, weakness of memory and intellect, and in very few cases excitement. The grave disturbances of the circulation,

the increased endocranial pressure and hydrocephalus account, with sufficient exactness, for these facts.

We would here remark that the numerous cases of tumors of the cerebellum collected from different authors, and examined by us, do not at all give support to the theory of Gall, that the cerebellum is the seat of sexual appetite.

Sudden death occurs with some frequency in tumors of the cerebellum; it is sometimes preceded immediately by headache, epileptiform convulsions, coma and sopor. These phenomena are the effect of the augmented endocranial pressure, or a bulbar paralysis consequent on an irritative state, or an excessive compression made by the neoplasm.

Before closing this chapter on neoplasms of the cerebellum, we would call attention to the fact that all the morbid phenomena described may be found variously combined in different cases. Sometimes nothing is noticed but occipital headache alone (Frestel); or this associated with vomiting (Steven, Schueppel). Winter found a cysto-sarcoma of the right cerebellar hemisphere, in a soldier who died suddenly; he had presented only violent pains in the occiput and the neck, and vomiting. Sometimes, in addition to the vomiting, there are vertigo and visual disturbances, epileptiform convulsions, without any alteration of motility. In some cases the morbid picture is very complex, because all, or nearly all, the symptoms described are presented in the course of the disease, (paralytic and irritative phenomena, vertigo, headache, amblyopia and amaurosis). It most frequently happens to us to observe, along with the headache, vomiting and visual disturbances, and the phenomena, which are regarded as characteristic of a cerebral affection, that is to say, vertigo and a staggering gait without paralysis of motion or sense. Finally we would submit for consideration the fact, that a tumor of the cerebellum may exist with complete latency of morbid phenomena, (Ebstein, Andral, Jackson), which usually happens when the seat of it is in one hemisphere only.

Electricity and the Death Penalty.

By CLARK BELL, Esq.,

President of the Medico-Legal Society of New York.

THERE has been for more than a quarter of a century in this State a prejudice against the scaffold and the hangman.

Those who have yielded to the stern exactions of the law, which demands "a life for a life," have felt an almost insurmountable repugnance to the rope.

The bungling of sheriffs' assistants, the negligent or ignorant adjusment of the noose, have often caused such revolting scenes at public executions as to fill beholders with horror; and add to that ever increasing number, now close to a majority, who demand the entire abolition of the death penalty as a punishment for crime.

The removal of the scaffold as a factor in the civilization of our century has engaged the attention of the Medico-Legal Society for many years.

The first introduction of the subject before that body was the paper of the eminent French scientist Ambrose Tardieu, entitled "Diagnosis of Hanging" (Medico-Legal Papers, Series 3, p. 40).

The late Dr. Alonzo Calkins read a paper before that Society, in September, 1873, entitled "Felonious Homicide; its Penalty, and the Execution Thereof Judicially," advocating the abolition of death by hanging, and discussing various methods as desirable substitutes (Medico-Legal Papers, Series 3, p. 250).

The discussion was renewed before the Society by Prof. J. H. Packard, of Philadelphia, who strongly urged the abolition of the hangman's rope and recommended as the most desirable substitute, death by inhalation of sulphuric oxide gas (Medico-Legal Papers, Series 3, p. 521).

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The whole subject was again brought before the Medico-Legal Society in February, 1888, by Dr. J. Mount Bleyer, in a paper entitled "Best Methods of Capital Punishment" (*Medico-Legal Journal*, Vol V., p. 424).

The Legislature of the State, upon the recommendation of Governor Hill, in his messages of 1885 and 1886, named a commission to examine the subject and report their conclusions, composed of Hon. Elbridge T. Gerry, a member of the Medico-Legal Society; Mathew Hale, Esq., of the Albany bar; and Dr. Alfred P. Southwick, of Buffalo.

On January 17th, 1888, this Committee submitted their report to the Legislature of New York. It is a very exhaustive and elaborate document, too long for insertion here. It gives the history of human punishments for crimes in earliest times and in all countries.

It enumerates and describes thirty-four different methods in which the death penalty has been hitherto inflicted.

The guillotine is in vogue in nineteen civilized countries; the sword in nineteen; the gallows in three; the ax in one; the cord in one, while executions are public in twenty-nine countries and private in seven.

The Committee claim and enumerate the following, as facts demonstrated by their inquiry:

- I. That the effort to diminish the increase of crime by the indiscriminate application of capital punishment to various offences involving different grades of moral turpitude, or, in other words, by enlarging the number of capital offences, has proved a failure.
- 2. That any undue or peculiar severity in the mode of inflicting the death penalty, neither operates to lessen the occurrence of the offence nor to produce a deterrent effect.
- 3. That from the long catalogue of various methods of punishment adopted by various nations at different times, only five are now practically resorted to by the civilized world. These five are: I, The guillotine; 2, The garrote; 3, Shooting; 4, The sword; 5, The gallows.

In recommending a change from the present barbarous and inhuman system of hanging, four substitutes are considered: 1, Electricity; 2, Prussic Acid or other poison; 3, Guillotine; 4, Garrote.

This Committee do not seem to have considered the proposal made by Prof. Packard, of a painless death by inhaling sulphuric oxide gas in a small room in each jail, nor the lethal chamber suggested by Dr. B. Ward Richardson, of London; and they discard the use of the hypodermic injection of prussic acid or other deadly poison, as "hardly advisable because against the almost universal protest of the medical profession."

Their conclusions, after a careful, thorough, very able and exhaustive examination of the whole subject, are as follows:

- I. That death produced by a sufficiently powerful electric current is the most rapid and humane produced by any agent at our command.
- 2. That resuscitation after the passage of such a current through the body and functional centers of the brain is impossible.
- 3. That the apparatus to be used should be managed to permit the current to pass through the centers of function and intelligence in the brain.

The commission suggested other considerations of great public interest, which may be stated as propositions:

- (1). That the State, by the present universal sentiment of mankind, can only justify itself in taking human life as a punishment for violation of laws; inflicting the death penalty, where necessary, for the safety of society and to deter others from the commission of crime.
- (2.) That the State has not the right to torture the criminal, nor to inflict any punishment whatever in any vindictive spirit or by way of retaliation for the crime.

The committee submitted a draft of a bill and recommend:

(a.) That executions should be private.

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- (b.) That the details of the execution should not be furnished to the public press; and,
- (c.) That the bodies should be delivered to medical schools for dissection in aid of science, or be buried in the prison yard.

The idea for punishment for crime has colored all human laws.

Such legislation has been called *punitive* for centuries.

These statutes are denominated *penal* in all the codes.

It is a little more than half a century since hanging was the penalty in England for more than one hundred statutory offences, many of which are now regarded as trivial.

Nearly all of these are abolished; but we still call the measure of punishment *penalties*, and we even say "the death penalty" when we discuss it, and use the term "capital punishment" for judicial killing.

The report of the Legislative Commission, considered in its broadest and ablest aspect, outside the abolition of hanging and substituting the electric current, lies in claiming that the universal public judgment and opinion of mankind should be recognized by the law-making power, declaring:

That the penalty for the violations of the law in what are called "capital cases" should not hereafter be regarded or treated as punitory.

That the State does not claim the right of inflicting any punishment upon the homicide in a vindictive or retaliatory sense, or in any degree or view as "punitory" or compensatory for the act committed.

That beyond the protection of society, the rights of men and what is called the "deterrent effect" of human punishment, the State has neither the right nor wish to go.

The Medico-Legal Society, by a committee appointed February, 1888, duly considered the whole subject, and the report of that committee was made to the body at the

March meeting, 1888, unanimously adopted by the Society, and transmitted to the Legislature. The report was prepared by myself and met the approval of the entire committee and was as follows:

REPORT OF THE COMMITTEE ON BEST METHODS OF EXE-CUTING CRIMINALS.

To the Medica-Legal Society.

The Committee to whom was referred the subject of The Best Method of Executing the Death Penalty, respectfully report:

That in the consideration of this subject they have considered the several papers read before the Medico-Legal Society by Ambrose Tardieu; Dr. Alonzo Calkins; Prof. J. H. Packard, of Philadelphia; Dr. J. Mount Bleyer; and the report of Hon. Elbridge T. Gerry; Alfred P. Southwick, M. D., and Mathew Hale, Esq., Commissioners, made to the Legislature on January 17, 1888, which were, by action of this Society, laid before this Committee at the February meeting.

Your Committee are of the opinion that the Commissioners are entitled to the thanks of the Legislature and the public, for the able and exhaustive labor they have bestowed upon the subject. Your Committee are of the opinion:

1. That the reduction in number by legislation among civilized States, of what are designated as capital offences, is in accord with enlightened civilization, and that its practical result has been the diminution, rather than the increase of crime.

2. That it should be legally established by legislative enactments, that the State, in fixing penalties for crimes, has no right to inflict a vindictive punishment upon a criminal, in any spirit of vengeance or retaliation. That the object and justification of punishment should be to deter others from the commission of crime.

3. That the provisions of our Constitution "that cruel and unusual punishments shall not be inflicted" should be enforced by appropriate legislation, and all existing statutes repugnant to either its letter or spirit be repealed.

4. That hanging should be abolished as cruel and contrary to the public sense of our civilization.

5. That as a substitute for the present death penalty we would recommend:

(1.) Death by the electric current, or-

(2.) Death by hypodermic or other injection of poison, or-

(3.) Death by carbonic oxide gas injected into a small room in each jail, as recommended by Prof. John H. Packard (Med.-Leg. Papers, Vol. III., p. 521), giving our preference to the first, or death by electric current.

6. That in our judgment executions should be private and not public.

7. That if it were possible to prevent the publication of details of executions in the public press, it would be a public good.

8. That the bodies of criminals should be delivered to the med-

ical schools, after execution, for dissection.

Your Committee do not pass upon the question of the propriety of inflicting capital punishment by the State, against which there is strong objection in the popular mind.

The report is intended to be limited to the subjects embraced in the report now before the Legislature of the State and the papers read

before this Society.

R. OGDEN DOREMUS,
CLARK BELL,
J. MOUNT BLEYER, M. D.,
CHAS. F. STILLMAN, M. D.,
FRANK H. INGRAM, M. D.,
COMMITTEE,

The Legislature of New York passed the following law, which received the approval of Governor Hill:

LAWS OF NEW YORK .- By Authority.

[Every law, unless a different time shall be prescribed therein, shall commence and take effect throughout the State, on and not before the twentieth day after the day of its final passage, as certified by the Secretary of State. Sec. 12, title 4, chap. 7, part 1, Revised Statutes.]

Снар. 489.

AN ACT to amend sections four hundred and ninety-one, four hundred and nine-two, five hundred and three, five hundred and four, five hundred and five, five hundred and six, five hundred and seven, five hundred and eight and five hundred and nine of the Code of Criminal Procedure, relative to the infliction of the death penalty, and to provide means for the infliction of such penalty.

Approved by the Governor June 4, 1888. Passed, three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Section four hundred and ninety-one of the Code of Criminal Procedure of the State of New York is hereby amended so as to read as follows:

§ 491. When a defendant is sentenced to the punishment of death, the judge or judges holding the court at which the conviction takes place, or a majority of them, of whom the judge presiding must be one, must make out, sign and deliver to the sheriff of the county, a warrant stating the conviction and sentence and appointing the week within which sentence must be executed. Said warrant must be directed to the Agent and Warden of the State prison of this state designated by law as the place of confinement for convicts sentenced

to imprisonment in a State prison in the judicial district wherein such conviction has taken place, commanding such Agent and Warden to do execution of the sentence upon some day within the week thus appointed. Within ten days after the issuing of such warrant, the said sheriff must deliver the defendant, together with the warrant, to the Agent and Warden of the State prison therein named. From the time of said delivery to the said Agent and Warden until the infliction of the punishment of death upon him, unless he shall be lawfully discharged from such imprisonment, the defendant shall be kept in solitary confinement at said State prison, and no person shall be allowed access to him without an order of the court, except the officers of the prison, his counsel, his physician, a priest or minister of religion, if he shall desire one, and the members of his family.

§ 2. Section four hundred and ninety-two of said Code of Criminal

Procedure is hereby amended so as to read as follows:

§ 492. The week so appointed must begin not less than four weeks and not more than eight weeks after the sentence. The time of the execution within said week shall be left to the discretion of the Agent and Warden to whom the Warrant is directed; but no previous announcement of the day or hour of the execution shall be made, except to the persons who shall be invited or permitted to be present at said execution as hereinafter provided.

§ 3. Section five hundred and three of said Code of Criminal Pro-

cedure is hereby amended to read as follows:

§ 503. Whenever, for any reason other than insanity or pregnancy, a defendant sentenced to the punishment of death has not been executed pursuant to the sentence, at the time specified thereby, and the sentence or judgment inflicting the punishment stands in full force, the Court of Appeals or a judge thereof or the Supreme Court or a justice thereof. upon application by the Attorney-General or of the district attorney of the county where the conviction was had, must make an order directed to the Agent and Warden or other officer in whose custody said defendant may be, commanding him to bring the convict before the Court of Appeals or a general term of the Supreme Court in the department, or a term of the Court of Oyer and Terminer in the county where the conviction was had. If the defendant be at large, a warrant may be issued by the Court of Appeals or a judge thereof, or by the Supreme Court or a justice thereof, directing any sheriff or other officer, to bring the defendant before the Court of Appeals or the Supreme Court at a general term thereof, or before a term of the Court of Oyer and Terminer in that county.

§ 4. Section five hundred and four of said Code of Criminal Procedure is hereby amended so as to read as follows:

§ 504. Upon the defendant being brought before the court, it must inquire into the circumstances, and if no legal reason exists against the execution of the sentence, it must issue its warrant to the Agent and Warden of the State prison mentioned in the original warrant and sentence, under the hands of the judge or judges, or a majority of them, of whom the judge presiding must be one, commanding the said

Agent and Warden to do execution of the sentence during the week appointed therein. The warrant must be obeyed by the Agent and Warden accordingly. The time of the execution within said week shall be left to the discretion of the Agent and Warden to whom the warrant is directed; but no previous announcement of the day or hour of the execution shall be made, except to the persons who shall be invited or permitted to be present at said execution as hereinafter provided.

§ 5. Section five hundred and five of said Code of Criminal Proced-

ure is hereby amended so as to read as follows:

§ 505. The punishment of death must, in every case, be inflicted by causing to pass through the body of the convict a current of electricity of sufficient intensity to cause death, and the application of such current must be continued until such convict is dead.

§ 6. Section five hundred and six of said Code of Criminal Proced-

ure is hereby amended so as to read as follows:

§ 506. The punishment of death must be inflicted within the walls
of the State prison designated in the warrant, or within the yard or
inclosure adjoining thereto.

§ 7. Section five hundred and seven of said Code of Criminal Pro-

cedure is hereby amended so as to read as follows:

8 507. It is the duty of the Agent and Warden to be present at the execution, and to invite the presence, by at least three days' previousnotice, of a justice of the Supreme Court, the district attorney, and the sheriff of the county wherein the conviction was had, together with two physicians and twelve reputable citizens of full age, to be selected by said Agent and Warden. Such Agent and Warden must, at the request of the criminal, permit such ministers of the gospel, priests or clergymen of any religious denomination, not exceeding two, to be present at the execution; and, in addition to the persons designated above, he may also appoint seven assistants or deputy sheriffs who may attend the execution. He shall permit no other person to be present at such execution except those designated in this section. Immediately after the execution a post-morten examination of the body of the convict shall be made by the physicians present at the execution, and their report in writing, stating the nature of the examination, so made by them, shall be annexed to the certificate hereinafter mentioned and filed therewith. After such post-morten examination the body, unless claimed by some relative or relatives of the person so executed, shall be interred in the graveyard or cemetery attached to the prison, with a sufficient quantity of quick-lime to consume such body without delay; and no religious or other services shall be held over the remains after such execution, except within the walls of the prison where said execution took place, and only in the presence of the officers of said prison, the person conducting said services and the immediate family and relatives of said deceased prisoner. account of the details of any such execution, beyond the statement of the fact that such convict was on the day in question duly executed according to law at the prison shall be published in any newspaper.

Any person who shall violate or omit to comply with any provision of this section shall be guilty of a misdemeanor.

§ 8. Section five hundred and eight of said Code of Criminal Pro-

cedure is hereby amended so as to read as follows:

- § 508. The Agent and Warden attending the execution must prepare and sign a certificate setting forth the time and place thereof, and that the convict was then and there executed, in conformity to the sentence of the court and the provisions of this Code, and must procure such certificate to be signed by all the persons present and witnessing the execution. He must cause the certificate, together with the certificate of the pest-mortem examination mentioned in the preceding section, and annexed thereto, to be filed within ten days after the execution in the office of the Clerk of the county in which the conviction was had.
- § 9. Section five hundred and nine of said Code of Criminal Procedure is hereby amended so as to read as follows:
- § 509. In case of the disability, from illness or other sufficient cause, of the Agent and Warden to whom the death warrant is directed to be present and execute said warrant, it shall be the duty of the principal keeper of said prison, or such officer of said prison as may be designated by the Superintendent of State Prisons, to execute the said warrant and to perform all the other duties by this act imposed upon said Agent and Warden.
- § 10. Nothing contained in any provision of this act applies to a crime committed at any time before the day when this act takes effect. Such crime must be punished according to the provisions of law existing when it is committed, in the same manner as if this act had not been passed; and the provisions of law for the infliction of the penalty of death upon convicted criminals, in existence on the day prior to the passage of this act, are continued in existence and applicable to all crimes punishable by death, which have been or may be committed before the time when this act takes effect. A crime punishable by death committed after the beginning of the day when this act takes effect, must be punished according to the provision of this act and not otherwise.
- § 11. All acts and parts of acts inconsistent with the provisions of this act are hereby repealed.
- § 12. This act shall take effect on the first day of January, one thousand eight hundred and eighty-nine, and shall apply to all convictions for crimes punishable by death committed on or after that date.

STATE OF NEW YORK, OFFICE OF THE SECRETARY OF STATE, \} 83.

I have compared the preceding with the original law on file in this office, and do hereby certify that the same is a correct transcript therefrom and of the whole of said original law.

Frederick Cook, Secretary of State. This statute going into effect January 1, 1889, the writer felt it the duty of the body to consider, for the benefit of public officials, "what was the best method of carrying the same into effect," and recommended to the Society the appointment of a committee to consider this subject and report.

A preliminary report was made by this committee, at the November meeting, 1888, which was laid over for discussion to the December meeting, 1888.

That Committee there made a detailed report which was, after discussion, unanimously adopted by the body.

The report is as follows:

REPORT OF THE COMMITTEE OF THE MEDICO-LEGAL SOCIETY ON THE BEST METHOD OF EXECUTION OF CRIMINALS

BY ELECTRICITY.

Introductory.—In the six weeks that have elapsed since the preparation of our original report to the Society we have made further valuable experiments, and although our report had not as yet been officially printed, we have received so many useful suggestions and criticisms upon such portions as had been given to the public in the press—both through correspondents and through discussions in various papers and journals—that we are enabled to present at this meeting a fuller and more explicit expression of our opinions. The additional light thrown upon a difficult problem has permitted us to make a few slight alterations in our earlier report, and to subjoin an appendix for the better elucidation of the subject.

THE REPORT.

To the President and Members of the Medico-Legal Society:

Your Committee appointed at the September meeting to consider and advise upon the proper method of executing criminals by electricity, reports as follows:

The law recently passed by the Legislature of the State of New York, providing for the administration of capital punishment by electricity, goes into effect January 1st, 1889. All murderers sentenced to death for crimes committed on or after that date are to die by this means. As the use of electricity is an entirely novel method of putting to death human individuals, the manner of the application of the lethal current requires some thoughtful care and study.

The Commission appointed by the Governor to examine into various methods of causing death, which should be more humane than hanging, decided upon electricity. This Commission caused certain experiments

to be carried out upon dogs, by which it was proven that electricity will produce certain and instantaneous death. In these experiments the animals were placed in a zinc-lined box half filled with water connected with one pole, while the other pole, in the shape of a wire, was wound around the nose or inserted into the mouth. There are no data as to the amount or kind of electricity employed. This method, although success-

ful, is hardly applicable to a human being.

Some experiments were conducted by one of our Committee (Dr. J. Mount Bleyer), and reported in the *Humboldt Scientific Library*, March. 1887; and during the past summer a series of thirty or more careful experiments were made upon dogs with death currents, at the Edison Laboratory, in New Jersey, by Messrs. Harold P. Brown and A. E. Kennelly and the chairman of this Committee (Dr. Frederick Peterson), all of which are of particular value to us in suggesting the proper method of executing criminals by electricity. These last were published in detail in the *Electrical World*, August 8th, 1888, and from them we have ascertained the following points:

The resistance of these dogs was measured and found to vary from 3,600 to 200,000 ohms, depending upon the differing thicknesses of skin and hair, and the amount of moisture between the skin and the electrodes. The amount of electro-motive force was also accurately determined, and it was found that with the alternating current, as low as 160 volts was sufficient to kill a dog, and that with the continuous current a much higher voltage was necessary for the production of a fatal effect.

There are several points requiring thoughtful consideration in the application of death currents to man which we now proceed to lay before

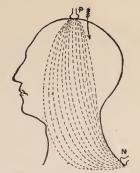
The average resistance of the human body is about 2,500 ohms. The most of this resistance is in the skin. It is evident, therefore, that the larger the surface of the electrode applied to the body the less will be the resistance. But it is also a fact that the density of the current depends upon the superficial area of the electrode. With a pole of small diameter the passing current will be more dense than when an electrode of large sectional area is applied.

We think that immersion of the body in a large quantity of water to act as one pole, or the placing of large metal plates upon any part of the body, should be put entirely out of consideration. It is further well known that, if metal be directly in contact with the skin during the passage of an electric current, burns and lacerations are apt to be produced.

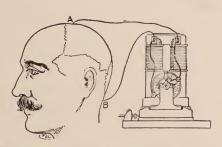
We believe that all means hitherto suggested are open to criticism upon these grounds. The posture of the criminal requires also some discussion at our hands. We think there are serious objections to the employment of any apparatus in which the prisoner takes a standing position. There are so many histories of unseemly struggles and contortions on the part of criminals executed by the old methods, that the necessity of some bodily restraint is evident. Furthermore, the possibility of a tetanic contraction of the body from the shock of the current is to be borne in mind. In our opinion the recumbent or the sitting position is best adapted to our purpose.



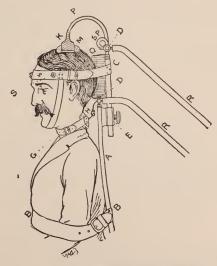
1. THE RECLINING TABLE.



2. THE HELMET AND ACTION OF THE CURRENT.



3. SHOWING THE ACTION THROUGH THE BRAIN.



4. THE APPLICATION OF THE CURRENT THROUGH THE BRAIN.

Another question of importance is to which part of the body the two poles should be applied. There can be no doubt that one electrode should be in contact with the head. The other might be placed upon any portion of the body, upon the trunk or extremities, but there are obvious reasons why the neighborhood of the spinal cord would be more advantageous. The electric current, in passing through the body from one pole to another, undergoes more or less diffusion through the tissues. A current passing from the top of the head to the small of the back will be diffused throughout a great part of the brain, and all of the tissues of the neck. The medulla oblongata-a part of the brain which is the most vital-together with all the nerves of the neck and the spinal cord, which exercise jurisdiction over the lungs and heart, will be thoroughly permeated by the current applied in this way. As the seat of consciousness is in the brain, and particularly in the cortex of the cerebrum, it is clear that this faculty of the mind will suffer at once, if the current be sufficiently strong. The electric stream flows from the positive to the negative pole, and there might be some possible advantage in placing the positive pole on the vertex of the head, nearest the center of consciousness, although death in any case will be instantaneous.

After mature deliberation we recommend that the death current be administered to the criminal in the following manner:

A stout table covered with rubber cloth and having holes along its borders for binding, or a strong chair should be procured. The prisoner lying on his back, or sitting, should be firmly bound on this table, or in the chair. One electrode should be so inserted into the table, or into the back of the chair, that it will impinge upon the spine between the shoulders. The head should be secured by means of a sort of helmet fastened to the table or back of chair, and to this helmet the other pole should be so joined as to press firmly with its end upon the top of the head. We think a chair is preferable to a table. The rheophores can be led off to the dynamo through the floor or to another room, and the instrument for closing the circuit can be attached to the wall.

The electrodes should be of metal, between one and four inches in diameter, covered with a thick layer of sponge or chamois skin.

The poles and the skin and hair at the points of contact should be thoroughly wet with a warm aqueous solution of common salt. The hair should be cut short. Provision should be made for preventing any moisture reaching from one electrode to the other.

A dynamo capable of generating an electro-motive force of at least 3,000 vclts should be employed, and a current used with a potential between 1,000 and 1,500 volts, according to the resistance of the criminal.

The alternating current should be made use of, with alternations not fewer than 300 per second. Such a current allowed to pass for from fifteen to thirty seconds will-insure death.

APPENDIX.

We append here the experiments in abbreviated tabular form upon which we have based our conclusions;

EXPERIMENTS WITH DEATH CURRENTS BY MESSRS. BROWN AND KENNELLY AND DR. PETERSON, AT THE EDISON LABORATORY AND AT COLUMBIA COLLEGE.

	Pounds Weight.	Ohms Resist- ance.	Character of Current	Voltage.	Duration of Contact.	Result.
Dog No. 1	10	7,500	Continuous	800	2 seconds	Death
" " 2	20	8,500	Alternating	8∪0	3 ''	Death
" " 3	13½	6,000	Continuous	1,000	instantaneous	Death
4	46 1/2	11,000	Alternating	800	21/2 seconds	Death
5	50	6,000	Continuous	1 000, 1,100 1,200, 1,300 1,400, 1 420 and 1,200	6instantaneous shocks, the last 2½ seconds	Unhurt
" " 6.	55	3,600	Alternating	570	3 seconds	Death
7	4:1/2	14,000	Alternating	250	5 "	Death
* * * 8	56	27,500	Alternating	160	5 "	Death
" " 9	5 9	5,000	Alternating	260	5 "	Death
" " 10	76	15,000	Alternating	330	3 "	Death
""11	61	14,000	Alternating	272	5 "	Death
" " 12	91	8,000	Alternating	340	5 "	Death
" " 13	13	30,000	Alternating	220	30 "	Death

(Details in Electrical World, Aug. 8th, 1888.)

EXPERIMENTS CONDUCTED BY MR. A. E. KENNELLY, AT THE EDISON LABORATORY.

			Pounds Weight.	Ohms Resist- ance.	Character of Current.	Voltage.	Duration of Contact.	Result.
Dog	No	. 14	21½		Alternating	205	3 seconds	Death
6.	6 6	15	19%		Alternating	176	15 ''	Death
4 6	6 6	16	391/2		Alternating	178	15 "	Death
"	6 6	17	57½		Continuous	400	40 "	Death
	4.6	18	18½		Alternating	140	45 "	Death
	6 6	19	20	8,000	Alternating	2.2	35 ''	Death
6.6	6 6	20	16%	4,200	Alternating	418	2 "	Death
66	6.6	21	37⅓	200,000 }	Continuous	304	30 ''	Unhurt
		21	21 3172	200,000	Alternating	10)	65 " "	Sunnara
44	6 6	22	121/2	4,000	Alternating	500	30 "	Death
6.6	6 6	23	33	11,000	Alternating	586	11/2 **	Death
• •	"	24	10	9,700	Alternating	517	1 "	Death

(Details in Electrical Review, Sept. 22d, 1888.)

Objections having been made to the dogs on account of the small weight of the animals, the following larger animals were experimented upon by Mr. Harold P. Brown before your Committee:

EXPERIMENTS CONDUCTED BEFORE THE COMMITTEE OF THE MEDICO-LEGAL SOCIETY, AT THE EDISON LABORATORY, DEC. 5TH, 1888.

BY HAROLD P. BROWN.

	Pounds Weight.	Ohms Resist- ance.	Character of Current.	Voltage.	Duration of Contact.		Result.
Horse	1,230	11,000	Alternating	7 (0	25	seconds	Death
Calf	1241/2	3,200	Alternating	770	8	6.6	Death
Calf	145	1,300	Alternating	750	5	6.6	Death

(Details will be reported in Electrical World.)

In most of the dogs the poles were bare copper wire around wet cotton waste wound about a fore and opposite hind leg. Poles the same in a horse, but applied to both forelegs. In the calves sponge-covered metal electrodes were applied, one to middle of forehead, and one near the spine between the shoulders.

Death with the alternating current was without a struggle; with the continuous, painful and accompanied by howling and struggling.

In the earlier experiments where the alternations were from 660 to 4,100 per minute, the voltage was higher. In most of the experiments the alternations were made from 12,000 to 17,280 per minute, and the number of volts electro-motive force required was decreased.

It was suggested to us that the current should be applied through wristlet electrodes. Acting upon this idea we caused the poles to be applied to the forelegs of the horse, but were disappointed in the result.

This method seemed not nearly as effective as our own suggestion of application to the head and back, as was illustrated in the speedy and easy death of the two calves.

Mr. Elbridge T. Gerry, Chairman of the Commission appointed by the Governor, whom we invited to accompany us and witness the latest experiments, has suggested that clock-work be employed to make and break the circuit when criminals are executed in this manner, and we think this a matter worthy of the attention of those who are to carry out the requirements of the law. His request that we specify more particularly the kind of apparatus needed, has led us to make inquiry in this direction. Relative to this matter, Mr. Harrold P. Brown, who, by his numerous physiogical experiments with death currents and his high attainments in this department of science, is pre-eminently qualified to speak with authority upon this subject, recommends as follows:

"I think a portable steam-engine of three-horse power with a dynamoelectric generator of the alternating type, self-exciting or with a small exciter, would be preferable. I approve fully the recommendations of your committee in regard to the electro-motive force and other details. In my opinion \$5,000 would cover the cost of this apparatus." If any doubt should exist in the minds of some that electricity would not necessarily be fatal to man because it has been successfully applied to lower animals, we have but to call attention to the fact that since 1883 some 200 persons have been killed, as we are credibly informed, by the handling of electric lighting wires.

As most of these people were killed probably by contact of the hands with the wires, it shows that in man at least death is rapid in this manner. Hence the suggestions made to this Committee as to the use of wristlet electrodes have their value; and it is possible that this method, with the prisoner fastened in a chair, may ultimately prove the most desirable, as doing away with a complication of appliances and lending greater simplicity to the procedure.

FREDERICK PETERSON, Chairman. R. Ogden Doremus, Frank H. Ingram, J. Mount Bleyer.

Hon. Elbridge T. Gerry, who was named as a member of this Committee, preferred, on account of his relation to the Legislative Commission, not to act upon this committee, and his name is therefore not attached to this report.

Mr. Henry Guy Carleton, a member of the body who has given the subject great attention, read a carefully prepared paper at the December meeting on the same subject, which was considered at the same session at which the report of the Committee was approved.

The law, by its terms, goes into effect January 1, 1889, and should be given a fair trial before popular opinion should be excited against it or any general reopening of the discussion as to its wisdom.

It will be the first attempt made to use the electric current as a means of producing death or as a human punishment.

The Committee of the Medico-Legal Society were authorized and requested to consult electricians; and their report as to the selection of the appropriate current to be used is based as well on actual experiments as on the highest electrical authority.

Mr. Thomas A. Edison, than whom none can be regarded as a higher authority, has said upon this subject:

The best appliance in this connection is to my mind the one which

will perform its work in the shortest space of time and inflict the least amount of suffering upon its victim.

This I believe can be accomplished by the use of electricity, and the most suitable apparatus for the purpose is that class of dynamomachinery which employs intermittent currents.

The most powerful of these are known as "alternating" machines.

The passage of the current from these machines through the human body, even by the slightest contact, produces instantaneous death.

The plan suggested by the Committee is one which leaves no room for intelligent doubt or criticism, that if followed by the warden of the State prison or other officials, the law, in its spirit and intent, will be perfectly and successfully carried into effect.

Acute Trophic Neuroses in the Insane, especially the Diffuse Phlegmon.*

By ReserveLage Helweg, Aarhūs Sindssygeanstalt.

If, in a considerable number of individuals who all suffer from the same fundamental lesion, as, ex. gr., the patients of an asylum, who all have a more or less severe affection of the central nervous system alike; and with these it is that we shall especially concern ourselves here, one observes that at an advanced stage of their disease certain affections of other organs arise more frequently than is elsewhere met with, it can, perhaps be assumed it is not accidental, but depends upon a casual relation existing between the primary affection (fundamental lesion) and those arising later.

To take a striking example: When we see that the characteristic hæmatoma is almost never found outside of insane asylums, but within these, and if not an "every-day" affair still a frequent ocurrence, it can be assumed that there exists a casual relation between the affection of the central nervous system and the ear tumor. Such a relation can usually be said to exist in two modes, in that the central affection can, through its nerve connection with the more distant organ, either call forth the affection in the latter directly, or predispose it so that an exciting cause is necessary to call forth disease. Really there is no actual difference between these two modes of action, because the predisposition can in time become so great that the physiological processes of the body are alone sufficient to act as exciting causes whereby the affection is said to have arisen spontaneously. To keep to the hæmatoma, the predisposition seems to consist of that brittleness of the vessel walls to be found in the advanced stage

^{*} Translated from the "Nordiskt Medicinskt Archiv," by Haldor Snevr, M. D., Assistant-Physician, Dryton Asylom for the Insane.

of many forms of insanity; in most cases a blow on or an injury to the ear can be demonstrated as the cause of the tumor's formation, but sometimes this cannot be done, and the possibility that the brittleness of the vessels can have become so great that a congestion of the head, or even the physiological blood-pressure, can have been sufficient to rupture the vessel walls, cannot be denied; and again, the difference between the two modes of action, the direct and indirect, disappears entirely in that the predisposition itself is a diseased condition, a nutritive disorder of the tissues, yet not great enough to give rise to definite symptoms; the brittleness of the vessel walls therefore is due to a disorder of nutrition in these, and must be considered a direct effect of the disease in the central nervous system, a trophic neurosis, while the bloody swelling of the hæmatoma is more an accidental formation.

It is not my purpose to go further into the theories of trophic neuroses or the different clinical forms. Of the first there is at this time very little that can be said with certainty, and the latter, as well as the nearly allied vasomotor disturbances, are described in many hand-books and monographs.¹

I will in the following merely endeavor to make a contribution to the fund of clinical matter, and especially direct attention to the diffuse phlegmon, which, in my opinion, can be of neurotic origin. This opinion, that the diffuse phlegmon is in many instances an acute trophic neurosis I base on, (I), that it is found more often in hospitals for the insane than outside; (2), that in a pathological regard it is very nearly allied to acknowledged trophic

^{1.} Eulenburg und Landois: Die vasomotorischen Neurosen. Wiener medicin. Wachenschr. 1867-68.

Eulenburg und Guttman: Die Pathologie des sympatheticus. 1873. Trumit de Fontarce: Pathologie clinique du grand sympathique. 1880.

Vulpian: Legons sur l'appareil vaso-moteur. 1875.

Samuel: Die trophischen Nerven. 1860.

Arnozoan: Des lesions trophques consicutives aux maladies du systime nerveux 1880

Charcot: Legons sur les maladies du systime nerveux I. 1880. Schwimmer: Die neuropatischen Dermatonosen. 1883.

neuroses; and (3), that in many instances it occurs in acute (cerebro) spinal affections in such a manner that it must be regarded as a sequela of these. We shall take up these reasons each for itself.

I.

Diffuse phlegmon occupies in my estimation then, a similar position, if not so prominent, as the hæmatoma, in that it is found much oftener in institutions for the insane than in outside practice. Decisive evidence in figures, for the correctness of this statement, I cannot give because I have not the material; but I shall present that which, in conjunction with ten years' observation, I have to base this opinion on.

In this hospital are kept clinical records wherein all the so-called somatic affections are recorded, which are of such moment that the patient because of them is confined in bed-those cases which would outside seek medical aid. These cases, naturally few in number, partly because the comparatively large contingent of children is lacking, and partly, because in institutions, the inhabitants are protected against many harmful influences, and especially contagion. However, it is only the records of the last five years that I dare vouch for as accurate enough to obtain trustworthy results from. Taking these then, we find 255 cases of sickness noted, and among them six cases of diffuse phlegmon. These six cases are evenly distributed over the five years, and I am of the impression that they have not occurred in this time oftener than we are accustomed to see them. On the whole number of cases therefore, we get 2.4 per cent. cases of diffuse phlegmon, or for every forty-two cases of somatic sickness one diffuse phlegmon.

How often this affection occurs in outside practice I know not, nor do I know that it is anywhere stated, but every practicing physician will doubtless admit that the proportion given is extraordinary. For comparison I have from my private practice, which in no particular has the

stamp of specialty, gone over the last 2,000 cases of sickness in adults, and only find one case of diffuse phlegmon; the 2,000 are of course an arbitrarily chosen number and perhaps far from the right proportion, but it gives at least an idea of how rare a disease the diffuse phlegmon is outside of surgical divisions and—dare we add—insane asylums.

The thought now suggests itself, is there not something in the conduct or behavior of the insane which can account for the frequency of the affection under discussion; if they don't, by their disquiet, cause lesions which again give opportunity for phlegmonous processes; or if, by their uncleanliness, they do not infect accidental small sores which can be a starting-point, etc.? However, nothing of this kind seems to be the case. Grave surgical lesions belong to the greatest rarities in these institutions; years can pass without showing anything but a simple fracture now and then. In one of the cases I shall later describe, the phlegmon combined itself with an acute arthritis, without any seemingly direct relation between the two, and in none of the other cases was there any outer occasion demonstrable; they all must surely have arisen spontaneously. Besides this lack of extraneous causes there is yet a relation to consider, viz., that the diffuse phlegmon is not equally distributed in all forms of insanity; it is only found in those cases where we must assume that permanent anatomical changes have occurred in the nervous system. It is wanting in the recent psycho-neuroses and insane states, but occurs in the secondary stages of psychoneurosis, and in such mental diseases as have from the beginning the impress of gross anatomical changes. the first named we meet only with vasomotor disturbances; in the latter also trophic disturbances, and the diffuse phlegmon comes nearly always simultaneously with, or immediately following the trophic neuroses.

II.

By diffuse phlegmon we mean a phlegmonous inflammation with the following clinical course: It begins with

a considerable swelling of large extent; for example, from knee or elbow to the phalanges; the swelling is not hard, but tense and elastic, skin intensely red, going over to bluish or brownish, and if the redness is brushed aside the cutis often has a yellow color; after a few days the tension in the swelling disappears and it becomes fluctuating, and the redness disappears somewhat from the outer points, but this is not a sign of resolution; the fluctuation is due, as incision shows, to thin pus, which to a large extent infiltrates the subcutaneous tissues (purulent ædema) and if not evacuated by free incisions, undermines the skin so that it lies like a loose capsule over the muscles and their fasciæ. The last become necrotic so that the suppuration extends between the muscles, and the skin sloughs off at one or more places whereby the pus can drain away and the process come to an end. The characteristic of it is, therefore, that the pus does not gather in a defined abscess cavity, but infiltrates the whole of the attacked part, with perhaps a place or more where it is gathered in greater quantity, inviting incision; the peculiarity of the pus consists partly in its thinness, and partly in that it is discolored, owing to variable quantities of effused blood; we nearly always find, also, shreds of necrosed connective-tissue. This affection, diffuse phlegmon, does not stand isolated. There are many nearly related affections which are richly represented in asylums; some stand side by side, such as the circumscribed phlegmon, furuncles, etc.; others, as the diffuse erythemata, are to be considered as introductory to it. With the latter we shall first concern ourselves. Diffuse ervthema occurs in the insane, sometimes in a mild, sometimes in a severe form. (1), The mild form is principally the symmetrical erythema of legs and feet. This belongs to the most common affections of the insane; how frequent I cannot state accurately, because as a light and frequently recurring affection, it is liable to be omitted from the clinical records. Every case of redness and swelling of the crura cannot be referred to

the erythemata. As is well known in the older cases, seldom in acute cases of insanity, there develops little by little, ædematous swelling of the legs and feet and sometimes of the hands; the skin is cold and red or bluish, with faintly red patches; the condition is enduring, broken off only when the patient is kept in bed, the symptoms then disappearing quickly, but reappearing as quickly when the patient goes about again. These are purely passive phenomena, in all probability due to muscular relaxation of the coats of the blood-vessels. Erythema, on the contrary, is an acute affection of the skin of an inflammatory character, consisting of an active hyperæmia of the corium and serous infiltration of the subcutaneous tissues. The swelling, including, as a rule, both feet and limbs, can be very considerable and is tensely elastic: the skin is hot, red and glistening; in the mildest cases. a bright red; in the severer forms, darker and often having a yellowish ground color. The boundaries of the erythema not distinguishable. If patient is confined in bed, he may recover in a few days and the attack thereby ended; but, as a rule, the affection recurs later. There can, however, be cases that point to deeper trouble. The erythematous patch can be infiltrated with petechiæ. and these can, especially just above the ankles, coalesce into large flat areas, or the affection may lose itself at the periphery, while in central spots, likewise above the ankle, are formed firmer infiltrations under the skin that are slow to disappear, and perhaps leave a certain amount. of scleroderma. Besides the symmetrical erythema of the legs, the milder forms of erythemata are to be seen around lesions of the cutis, ulcers, furuncles and the like. and it seems on the whole as though a local irritation were necessary to call them forth. It does seem as though the symmetrical erythema of the legs arises spontaneously, but it never occurs in patients who stay in bed, only in people who are up and move about, and when by confinement in bed it is made to disappear, we occasionally see it immediately recur when patients get-

up again; this may be repeated several times; it indicates that the upright position with its accompaniment, an increased blood-pressure in the legs, acts as a local irritant. That the erythema is symmetrical depends solely on the fact that the cause operates alike on both sides. with Schwimmer,1 we look upon these erythemata as angioneuroses, it must be supposed that they are called forth in a reflex way; but a great receptivity, a predisposition must be assumed in order that the named causes can alone suffice to call them forth. These milder forms of erythema never pass over to diffuse phlegmon, at all events not the symmetrical erythema of the legs, but the (2) severer forms can. For these no external accidental cause can be demonstrated. They always seem to arise spontaneously, and can arise as well in patients who for a long time have been bed-ridden as in those who are up and about; are therefore never bilateral, and if they seem to have a predilection for the legs, they are also to be seen on other places, especially on the fore-arms. If they are to be ascribed to a neurotic origin, it must be assumed that they do not arise reflexly, but by direct lesion of the concerned nerve apparatus. Their course is as follows: In the beginning they don't differ essentially from the foregoing lighter forms, only indicating their more grave nature by a darker redness of the skin, greater firmness of infiltration, greater painfulness and greater suffering of the general system.

Under confinement in bed and applications, resolution may occur in this first stage. If this does not take place suppuration follows, which may occur either on the surface of the cutis or in the depths of the subcutaneous connective-tissue. In the first instance the rete malpighi becomes infiltrated with thin purulent matter which lifts the cuticle, first in small, separated, afterwards confluent, flat vesicles; the epidermis is knocked off and the surface of the vesicating corium appears. This process is however limited to the central part of the erythema, After a time healing

^{1.} Auf. St. S. 258.

begins and more or less of complete resolution, with perhaps a permanent induration and pigmentation left; sometimes other skin affections, as furuncles, ecthyma, etc., follow immediately after. If, on the contrary, suppuration occurs in the deeper layers, we get the diffuse phlegmon described above, therewith having done with the erythema; or, but much rarer, the erythema concentrates so that we get a circumscribed phlegmon, an abscess of the subcutaneous connective-tissue. Occasionally a superficial and deep suppuration can be seen occurring together. The severe forms of erythema correspond so nearly in many particulars with diffuse phlegmon that in the beginning of the affection it is often impossible to distinguish between them. If it progresses to resolution or subepidermoidal suppuration, we call it an erythema; but if the suppuration be subcutaneous, a phlegmon. Such a case, which appeared like a beginning diffuse phlegmon, but in its course showed itself an erythema, will be described further on under Case history IV. On the other hand, the severer erythemata are not to be distinguished from the lighter forms, for there are all gradations between them. Through the latter we are led to the simple œdemas, having subcutaneous infiltrations in common with the erythemata, but lacking the hyperæmia of the corium, and which we shall therefore briefly consider here. It has alredy been stated that in the insane we frequently meet with edemas, passive stasis-edema, ascribed to a weakness of the heart and arterial muscle walls. On the outside of the institutions, we likewise meet with ædemas in diseases of the cord, and kidney affections with considerable albuminuria; and finally, we sometimes meet with cedemas, that cannot be ascribed to any of the above named causes. I cannot give a precise clinical description of them, as they are quite rare and of an evanescent nature; yet I shall present a few points. They arise in the same class of patients as do the previously mentioned skin affections, consequently, where there is present a deeper-reaching affection of the central nervous system, occasionally conjoined with a "nervous marasmus," yet also when such an one is not conspicuously present. They seem to develop altogether spontaneously, come suddenly, are present a few days and then disappear without any noticeable change in the patient's condition taking place. They are most often present in the face, occasionally on the hands; perhaps they are also localized on other parts of the body easily overlooked because covered by clothing. But once have I seen a severe case of these œdemas (Clinical history III.) In the last two months of the patient's life they came and went in rapid change, showed themselves first in the feet, then about the right eye, spreading therefrom over the whole face. At the worst the face, hands and feet were simultaneously attacked, so that the patient with his pale cedematous face resembled very much a case of advanced Bright's disease; but not the slightest trace of albumen was to be found in the urine. The last few days of his life the œdema was constant. In the same manner that an erythema can go over to a diffuse phlegmon, can an œdema go over to an erythema. It is at least acknowledged that where there is ædema there comes a light erythema of the skin, it becomes red, the swelling increases, and not only the milder but also the severer forms of erythema, may develop in ædematous parts.

In consonance with the clinical pictures therefore, cedema, erythema and diffuse phlegmon form a unit. The different hypotheses concerning their pathogenesis I shall not enter upon more than to say, that in reference to this point Vulpian¹ designates cedema an abortive inflammation. Pathological anatomy also unites them, in that, as Ranvier has pointed out and Renaut² substantiates, in every case of cedema is to be found not only an infiltration of serous fluid, but also numerous round cells, which are wandering white corpuscles, otherwise considered characteristic of inflammatory conditions. But once have

^{1.} Auf. St., II., s. 600.

^{2.} Renaut: Contribution a l'étude anatomique et clinique de l'erysipile et des cedimes de la peau.

I had the opportunity of making an anatomical examination of a recent case of erythema; it was characteristic in that it was developed in an œdema, and seemed in the the transition to form a diffuse phlegmon. The patient (Clinical history VI.) had kidney disease and was confined in bed with an ædema of both legs. One night there developed a very considerable erythematous swelling of the left leg and foot, with fine ecchymoses; the following day the petechiæ had coalesced, forming a dark ecchymotic surface; the following night he died. Perpendicular section through the erythematous skin revealed to the naked eve that the ecchymotic coloring belonged to the uppermost layer of the corium, which, as a sharply-defined, dark red line, ran along under the epidermis; at the same time the fat-cell alveoli appeared as dark-red points in the subcutaneous connective-tissue. Under the microscope, the uppermost, delicately-woven layer of the corium was almost completely covered by red blood corpuscles, which also filled the papillæ; in spots where they were not so numerous the layer was infiltrated with small round cells, and supplied with greatly distended blood-vessels. In the remaining closely-woven layers of the corium were but few changes, the bundles a very little swollen, and a very meager proliferation of the connective-tissue corpuscles; no increased blood-supply. In the subcutaneous tissue, large, well-distended vessels in the fat-cell alveoli and masses of free corpuscles, especially heaped up at the alveolar margins; connective-tissue bundles between the alveoli much softened and open in the web (because of œdema), and strongly infiltrated with round cells, which were less numerous in the upper layers, displaying many very large cells, 15-20 u, with one or two large nuclei; but down in the deeper layers steadily thicker, almost completely concealing the meshes. Here also, the large cells disappeared, and only ordinary small round cells with one-half the diameter remained, the majority shrunken and granular. This section revealed, therefore, an inflammatory process in the uppermost layers of the corium and in the subcutaneous connective-tissue, in both places attended by an excessive exudation of red blood corpuscles, while the greater part of corium was uninjured. Had the patient lived a formation of bullæ on the surface would probably have occurred, and without doubt a suppuration deeper, where pus had already nearly formed. What interpretation is to be placed on the large cells in the upper layers of the subcutaneous connective-tissue, I know not; they resembled mucus corpuscles.

Nearly related to the affections here considered, especially with the severer erythemata, is erysipelas; but it differentiates itself clinically, however, by its sharply defined border and raised line, which points to a more serious involvement of the corium, and also by the possibility of a bullous formation over the entire surface involved, while in erythemata the bullæ only occupy the center of the part. By its orgin from infection it also takes a distinct position, and I cannot see that it occurs more frequently or otherwise in the insane than is usual. Now and then it occurs in small epidemics, but the opportunities are also unusually favorable. I shall therefore not dwell on it.

We shall now go over to the skin affections related to diffuse phlegmon, and which must be considered co-ordinate with it; and here shall be briefly mentioned a row of lighter affections, namely, circumscribed phlegmon and whitlow, anthrax and furuncle, ecthyma, and for the sake of completeness, can hereto be added a papular eruption (hemp seed to a pea in size, of a very dark-red color, and often with an effusion of blood into the papule), as therewith the lighter skin affections of an inflammatory nature, that play a rôle in insane asylums, are exhausted. That these affections occur more frequently in the insane than other individuals I do not doubt, but it is only an opinion: I cannot substantiate it by figures, as these cases are as a rule so light that we do not record them. Whitlow, as an example, is in the majority of cases subepidermoidal, very rarely subperiosteal. Only concerning circumscribed

phlegmon can I state with accuracy that there have been six cases in the last five years, the same number as of diffuse phlegmon (see page 3), and we also get here the same proportion to the total number of recorded sicknesses-one phlegmon in forty-two cases. That this is an unusual frequency there is perhaps no doubt, even if not as striking as in the case of the diffuse phlegmon. We will now go further and add to the named affections of the skin the last and most serious of all-those represented by acute decubitus, in order to observe the relation of diffuse phlegmon to these. It was Samuel¹ who first presented the conception "acute decubitus," by which he meant the gangrenous decubitus, which can develop itself in some hours or in a few days after a severe lesion of the spinal cord; but the most complete description of this affection, however, we owe Charcot.2 He shows that the acute decubitus not only follows spinal, but also acute cerebral affections, when they lead to hemiplegia; and further, that the last named affections have their seat on the natis of the lame side, while those following spinal affections occur, as a rule, in the middle line, over the os sacrum. His description of the process itself is so exhaustive that there is nothing essentially new to be added, and I shall therefore repeat it here:

"Some days or perhaps only hours after the inception of the spinal or cerebral affection, or after a sudden exacerbation of either of these, there appears on certain places of the skin, one or more erythematous, slightly raised spots of varying size and with a more or less irregular outline. (Anatomically I have shown that the skin is infiltrated with leucocytes as in erysipelas.) The color is a lively red and soon of a deep or even bluish redness, but it always disappears momentarily on pressure of the finger. Occasionally, but quite rarely there develops at the same time an apparently phlegmonous swelling of the skin and underlying parts, which can be excessively painful if the region is previously not anæsthetic. The following or next following day, vesicles or bullæ develop in the central region of the erythema, and they enclose sometimes a completely colorless, sometimes a turbid fluid of reddish or brown color. At this stage the process can stop and the vesicles dry up. In other cases the loosened epidermis is torn and comes away in shreds, whereupon a bright red surface

^{1.} Loc. cit. p. 239.

^{2.} Loc. cit. p. 82.

appears containing bluish or violet points and spots corresponding to an infiltration of blood in the skin. At the same time the subcutaneous tissue and sometimes the underlying muscles are the seat of a bloody infiltration, something I have often convinced myself of by sections. The dark-colored spots spread themselves quickly and coalesce at their margins and soon there is developed a mortification of the skin, at first superficial, but quickly extending deeper. Therewith are eschars formed. Later, begins a reaction and work of elimination, followed, in favorable cases, by a period of reparation, but too often the advance is retarded."

That this description of Charcot's is striking I have many times had the opportunity of verifying, as the acute decubitus belongs to the common affections of insane hospitals. It is not only in the acute hemi- and paraplegia that it arises but also in the course of the chronic affections of the central nervous system, and often without new or grosser changes in the psychical motor, or sensory spheres preceding, so that it comes as a surprise. It is especially the progressive paralysis and related conditions that are most prone to the development of the acute decubitus. As will be seen from the foregoing description, the first stage of the affection corresponds to the beginning of diffuse phlegmon. We meet again the great erythema and swelling of the subcutaneous tissues, and Charcot expressly points out that the whole of the attacked part often has a phlegmonous appearance; the next stage, the formation of bullæ, we also recognize as one of the forms in which the severer erythemata manifest themselves. The third stage, the formation of eschars, is also familiar. In diffuse phlegmon there is always a tendency to mortification, more rarely in a small portion of the skin, but as a rule, in large areas of the subcutaneous tissues. Finally, there is the fourth stage, which Charcot only mentions. In the favorable cases elimination of the eschars occur by a granulation process limited by the boundaries of these, but in the unfavorable cases, and they are the most frequent, suppuration occurs. The eschars occupy, as a rule, a comparatively small portion of the large erythematous swelling, but in the greater part of this area there is suppuration; by it the eschar is loosened and along the margin the pus discharges. This is thin, discolored and more or less mixed with blood; it is a purulent cedema, infiltrating the subcutaneous tissues, loosening the skin from its substratum and later permeating this in between muscles, etc. During this process the patient generally dies. I can, therefore, but believe that the disease process leading to acute decubitus is a diffuse phlegmon; occasionally there is resolution at an early stage, but generally an eschar is formed and suppuration occurs. The cause of the formation of a large eschar, which is essentially the point of difference between these cases and diffuse phlegmon, depends, perhaps, on purely extraneous causes. One would naturally first think of the pressure which these parts are exposed to; formerly this in connection with uncleanliness was considered the only cause of the whole process that ends with decubitus, but nowadays all vasomotor or trophic derangements take a place, greater or less, as causes; some, as Vulpian and Strümpell, lay the decisive weight on the pressure, while others, with Samuel, Charcot and Erb, only consider this an unavoidable occasional cause. The last appears to me the more probable. We sometimes see a patient lying with an acute sacral decubitus, almost immediately develop in the apparently healthy hip-region an erythema and decubitus if he be turned on his side. Here, undoubtedly, there must exist a great disposition to gangrene, and the pressure acts merely as the exciting cause. On the other hand one sees cases in which the whole process begins and runs its course without pressure having been a casual factor. As an instructive example in this regard, I present the following Case history:

I.—Male, æt. 46 years, well-nourished, suffering with progressive paresis of about one year's duration, had a maniacal attack with great restlessness, for which was ordered hot baths (four hours) daily. From these he derived several hours' rest; four days afterward there was observed a slight redness in the sacral region at 8 o'clock A. M. At 12 M., while sitting in the bath, his appearance denoted prostration and he was accordingly taken out; he walked without help to his bed and ate with an

appetite, but later in the afternoon he was unable to stand alone. At 8 P. M. patient was moribund, body cold, pulse imperceptible and tracheal râles. In a belt, six inches in width, over the sacral region, reaching across from one trochanter to the other, and also somewhat forward on the right side, the skin was of a dark-red color, which disappeared on pressure but immediately returned, and also the seat of a firm, somewhat doughy infiltration. In the center of the affected part was a dark-colored spot of two inches diameter, over which the epidermis was loosened as by a bullous formation. At 12:30 A. M. the patient died: the redness had then extended forwards on the thigh, where a bulla of 7-8 inches in extent had formed, filled with a blood-colored serum. Section showed that the decubitus-eschar was yet superficial, the subcutaneous tissue on nates and os sacrum infiltrated with Brain anæmic, tissue firm, otherwise nothing abnormal: the spinal cord in contradistinction very soft, but marking and color good. No microscopic examination.

This Case history shows, first, with what rapidity acute decubitus can develop. In less than twelve hours had formed not only the large phlegmonous surface, but a gangrene had occurred in a spot of two inches diameter. Secondly, it shows with tolerable accuracy that pressure is not necessary to *initiate* the process. This patient had in the last four weeks only been in bed a few hours daily and then not especially on his back; in the last five days he had remained four hours daily in a warm bath, but in this the position is such that there is no possibility of pressure in the sacral region, and yet the erythema appeared there. On the influence of uncleanliness nothing can, of course, be said.

The last afternoon he presumably lay somewhat quiet in bed, although he must have been out at least once, since it could be affirmed that he was unable to stand up alone, and possibly it was at this time that his position had given the opportunity for the formation of an eschar. Lastly, the history teaches that *coarse* lesions of the central nervous system are not necessary for the development of acute decubitus. In the brain there were no

local lesions; from the seat of the eschar and character of the process it should, according to Charcot, have been expected that a lesion of the spinal cord existed; that such was the case is perhaps not doubtful, as the patient was a paretic, most probably a chronic diffuse myelitis, as there were no signs of a systemic affection and the cord showed a decided diffuse softening. If there was an acute exacerbation of the myelitis, as the failing ability to stand indicated, it and the decubitus must have arisen nearly simultaneously. It remains only to remark that when the affection first began, it is a matter of taste whether we designate the swelling erythematous or phlegmonous; I can only say that the deep redness and great swelling semed to me to favor the last named.

I could present several similar cases that teach the same thing; for instance, cases in which a very similar erythema and gangrene spread down the lower extremities, occurred simultaneously with the sacral affection. in which there were no opportunities for even the slightest pressure. A case affecting the arm will later (Case history V.) be given. I shall not delay longer with this question, which, it seems to me, must be answered thus: that pressure is not necessary to call forth an acute decubitus, but where there is the predisposition the pressure may give rise to the erythema, where this otherwise would not have developed; and when we get the erythema, pressure may cause a gangrene in this, where otherwise resolution, or at most, suppuration would have occurred. have endeavored to show that the process in the sacral region leading to acute decubitus is identical with diffuse phlegmon. I shall now relate a little Case history, which shows that quite the same disease-process may occur in other parts of the body, and there we do not hesitate to designate it diffuse phlegmon.

II.—Patient is a 48-year-old mechanic, who has for five years suffered with progressive paresis. In the last year and a half he has led an almost vegetative existence;

the psychical functions seemed almost suspended, but digestion splendid, and condition apparently well-nourished.

February 15th. Yesterday was noticed on anterior surface of left leg a small excoriation with some redness and swelling of the limb. Patient to bed with tepid epithemas. To-day the foot and leg considerably swelled and erythematous, the redness extending also upwards along the posterior surface of the thigh. Instead of the excoriation there is a little superficial gangrene, and outside that a large ulceration, two inches in diameter, with uncleanly, bloody granulations. Beyond the ulceration the epidermis is lifted extensively by a serous fluid, not by bullæ, but a complexity of conjoined vesicles. Tenderness trifling, but a considerable lowering of the general sensibility; disturbances of motility not greater than usual.

February 17th. The above mentioned ulceration is now a deeply extending gangrenous mass, penetrated by and in places loosened by, a thin, ichorous pus, which in great quantity wells out under the deeply undermined encompassing edges. Some blood coagula can also be pressed out together with the pus. Around the ulceration the loosened epidermis is knocked off and the corium is of a deep dark-red color, but gangrene has not begun in it. The swelling of the foot is somewhat less, of the leg unchanged, and of the thigh increased, in that two-thirds of its circumference is a firm red surface that at upper extremity ends exactly at the natis. General condition

unchanged.

February 19th. The necrotic part can to-day be removed, and the tibia appears in the large sore covered by granulations that in places are dark-colored. A great quantity of stinking pus undermines the skin of almost the entire circumference of the leg, and on outer aspect of thigh palpation gives crepitation and an indistinct fluctuation; two incisions on the leg and one on thigh, with

an emptying of thin, dark, aerated pus.

February 21st. Limb improving rapidly. Yesterday and to-day a severe diarrhea. Diarrhea soon checked by tannin mixture, and healing moved ferward rapidly in the beginning, as the large undermined surfaces united with the underlying tissues over the whole extent. The loss of substance on anterior surface was quickly repaired by energetic granulations, which required a steady keeping down by bluestone. Cicatrization followed in the course of a month.

Here then we have a diffuse phlegmon which for a time involved the whole of the lower extremity, from natis to planta, losing itself in the periphery, but from the middle of the thigh to the middle of leg suppuration occurred, with all the signs of diffuse phlegmon; and besides. where the affection was most severe, we had a diseaseprocess which, by its form as well as rapid development, corresponded to acute decubitus: on the initiatory erythema, a vesicle and bulla formation, bloody infiltration of skin and subcutaneous tissues, rapidly developing and deeply extending gangrene. Finally, as an aid in the determination of the identity of the two affections, I shall relate later (Case history V.) where there developed, in a hemiplegic patient, simultaneously, disease of both upper and lower extremity of the lame side. On the humerus it had the character of acute decubitus, while on the thigh, of a diffuse phlegmon, but from the whole clinical picture, they must be considered as allied, and from a common cause originating, affections.

Therefore, the result of the above comparison is, that the diffuse, more or less inflammatory affections of the skin and subcutaneous tissues so frequently met with in the insane, namely: ædema. erythema, diffuse phlegmon and acute decubitus, pass from one to another clinically, and it is often very difficult to define the boundaries between them, therefore they cannot be considered as distinct affections, but as different stages of the the same affection, or as varieties thereof, in which local relations or extraneous causes determine the differences. If this be so it is also highly probable that these affections are also allied etiologically, that the cause which gives rise to one can with due modifications originate the others. It is generally accepted that ædema, erythema and acute decubitus can be of purely nervous origin; that they

^{1.} These affections belong to the trophic neuroses that Arnozoan (Op. cit., p. 282) designates as "lesions avec predominance de troubles vasculaire," in contradistinction to "lesions proprement dites," a division corresponding to Samuel's (Hand-buch der allgem. Pathologie, p. 154) "trophic inflammations and nutrition-disturbances in a more limited sense."

can arise as a direct sequelæ of a lesion in the central or peripheral nervous system; but concerning diffuse phlegmon, we find no such opinions among the various authors, while in my opinion it cannot without violence be separated from these. It would be fortunate if one could, in physiological experiments, find support for his belief, but it can only in the slightest degree be done. The question is principally concerning the existence of the "trophic nerves" of Samuel, which has called the researches forth in this direction-these nerves, whose fate cannot be decided, if they shall remain or not. Most physiologists reject or are sceptical concerning them; yet several, among them Landois, support them; and at present a series of experiments are, according to a preliminary communication, being conducted, which will determine their existence as indisputable. However, it is not the question as to whether the nervous system needs a special kind of nerve-threads to accomplish its trophic operations, that interests us here. What concerns us here is, can physiological experiments on the nervous system call forth suppurative inflammations in peripheral organs? Most of the experiments have consisted in cutting nerves. Magendie's panophthalmitis after section of the trigeminus, immediately occurs to us; but it seems, rightly enough, to be so clearly dependent upon the anæsthesia and its sequelæ that it cannot be used as proof. We could sooner seek it in the pneumonia following section of the vagus; but this is also a very doubtful trophic neurosis, and after other nerve sections there are, as far as I know, no acute inflammatory conditions. Irritation of nerves is much less used in the experiments. Samuel² has principally labored in this direction, endeavoring to apply strong and protracted irritants to the Gasserian ganglion, a series of peripheral nerves, and the posterior roots of the spinal nerves. If his results were to be depended upon they would in a

^{1.} Max. Joseph, Beltrage zur Lehre von den trophischen Nerven, Virchow's Archiv. 107, 1887, p. 119.

^{2.} Op. cit., p. 58.

high degree speak for diffuse phlegmon as a trophic neurosis, as he found that in the parts innervated by the attacked nerves, inflammatory processes arose, which showed themselves to be, more or less clearly, diffuse phlegmons. But these his results have been quite rejected by Weber¹ and others, who repeated the experiments without obtaining Samuel's results. He himself seems to have given them up, as he, in a later work2 passes them all by in silence except the ophthalmia after irritation of the Gasserian ganglion. Neither do we find pathologists referring to suppuration in the subcutaneous connective-tissues as trophic neuroses. In Samuel are to be found a number of older observations (especially Hamilton's) of acute trophic neuroses following lesions of sensitive nerves and spontaneous neuralgias. These are, as far as the skin is concerned, erythemata, with or without the formation of vesicles, herpes zoster, etc. On the contrary, subcutaneous suppurations are not mentioned. Occasionally there is subcutaneous swelling with the erythema, the affection so much resembling diffuse phlegmon that incisions were made in one case without, however, discovering pus. so-called pseudo-phlegmons are perhaps identical with the graver forms of erythema previously mentioned. Besides these, in Arnozoan are phlegmons spoken of as trophic neuroses, but quite briefly, and it seems, as non-suppurating. Charcot has only the same forms as Samuel, after lesions of peripheral nerves, besides (as formerly mentioned) the acute decubitus in central lesions. Schwimmer expressly leaves diffuse phlegmon out of the angio and trophic neuroses. Nor can I, in looking over the literature, find cases of diffuse phlegmon proper reported in connection with diseases of the nervous system, so that this interpretation must consequently be considered original, basing itself upon the frequency of diffuse phlegmon in the insane, and also on its clinical and anatomical relations to recognized trophic neuroses.

O. Weber: Ueber der problematischen Einfluss der Nerven bei der Entstehung von Entzundungen, etc., Centralblatt f. die med. Wissensch, 1864, p. 145.
 Samuel: Hand-buch der allgemeinen Pathologie, 1879.

Has then always "something ocurred" in the nervous system when these trophic inflammations arise? This question has repeatedly been touched upon, but we shall take it up once more. Acute decubitus is considered a trophic neurosis because it arises more or less directly after a severe lesion of the brain or spinal cord. This is the rule and naturally can be met with thus in the insane; but it can, at the same time also, and not rarely, occur here without a sign of such an acute lesion having preceded it. It is, as above stated, especially in paralytics that it occurs, and it may come with the so-called paralytic (apoplectiform, epileptiform) attacks, but following which, let it be remarked, there are not coarse, anatomical changes, but it can also arise independent of these, where there has simply been a more rapid progression of the chronic processes in the central organs. In this then we seek for the cause of acute decubitus, and we have a right to include other related inflammations arising under the same circumstances with them. Concerning the paralysis, we know that it is due to a disease affecting the whole cerebro-spinal axis; in other forms of insanity it is not as generally accepted that the disease extends beyond the brain; but about forty sections in cases of non-paralytic insanity have convinced me that, with the exception of the recent curable psychoses whose relation in this regard are unknown to me, there is in all cases of insanity a lighter or severer diffuse affection of the cord; frequently also pathological processes in the sympathetic, and occasionally in the peripheral nerves. In these two last I have not made any extended observations and can say nothing of the degree of frequency. These changes are accompanied only exceptionally by gross disturbances of sensation and motility. On the contrary, nutrition disturbances often play a prominent rôle, and these may be universal, a lowering of nutrition generally, or consist of the most diverse local changes in internal and external organs, either chronic or acute; to these last belong the trophic inflammations here treated of. In all the insane

therefore, at any rate where the disease is progressive and past the first functional stage, pathological processes creep into the central, and often perhaps, into the peripheral nervous systems, and the nutrition disturbances we see arising, soon here, soon there, are to be considered as shadows cast in the periphery by these processes, in that, they in their advance pass by the trophic centers, thereby obscuring their action in peripheral organs. What parts of the nervous system are servants of the nutrition we know but little of. To elucidate it by sections is a very extensive undertaking, as not only the central nervous system, but also the sympathetic and the peripheral nerves belonging to the diseased organ to their very endings, must be examined. A lesion in a more peripheral part of the conducting apparatus would make disease of more central parts quite without signification. I shall now relate three Case histories with the appertaining sections, to illustrate the trophic inflammation we are considering, together with the condition of the nervous system in them.

None of them satisfy the demands recently made of a complete section. Just as little as those later following were they made with this object in view. The examination of the spinal cord was the main object and the other parts were more accidentally included; but if it happens that all other "finds" (Fund) are recorded, it is because these sections may have some value as a contribution to a "material collection," and as we know not what the future will lay most stress upon, it is better to record everything. It is to be remarked, however, that the condition of the sp. cord may have a special signification in the question at issue; as it is the common pathway of all the nerve fibers to the body and extremities and for certain fibers to the head, not only local affections, but also diffuse, as the universal disturbances of nutrition can most readily be supposed to rise there. Everything is so condensed in it that localized lesions can have widely distributed effects; moreover, my researches in the insane, show that the degree of nutrition derangements and the extent of disease in the cord, as a rule, are in direct relation to each other. This rule has of course exceptions, as multiple neuritis has taught us, diffuse symptoms can be of peripheral origin. I am reminded of a patient suffering from hysterical insanity, who died under a great lowering of nutrition with universal extension-spasms, muscle-atrophies and chronic trophic neuroses of the skin. In her, the cord revealed only light, beginning interstitial changes, but when the three nerve roots of one of the upper extremities were examined, an advanced neuritis was found in all. As there was but a slight difference of degree in the condition of this extremity from the others, it is reasonable to suppose that the neuritis was generally disseminated.

III.—Melancholia, circumscribed phlegmon of both forearms, ædemas, hydrothorax, ascites chronic diffuse myelitis with central softening, especially in the lower half of cervical region.

Patient a 36-year old farmer's son, with strong hereditary predisposition, has for many years had hypochondria, to which has recently been added hallucinations, delusions

of persecution, agitation and anxiety.

June 21st. Admitted to asylum. Powerfully built; objective examination reveals nothing abnormal. Restless and anxious, with indefinite moaning.

June 26th. Very obstinate, will not eat, begins to

look ill.

July 13th. Stands constantly by the door; requires

feeding. Beginning hæmatoma of left ear.

July 17th. Has a considerable phlegmonous swelling on outer surface right fore-arm, Disappeared under applications.

August 14th. Quite a symmetrical phlegmon on left

arm. Abscess formed quickly, then healed.

September 2nd. Some ædema of both feet. Urine normal,

September 12th. Œdema disappeared, hæmatoma shrunken. Mentally the same.

October 21st. Light œdematous swelling about right eye. October 23rd. Œdematous swelling of face and feet,

very pale, livid appearance, greatly emaciated. Heartsounds weak but clear, pulse quiet, urine normal. Complains constantly, "cannot eat," and so must be fed.

October 24th. One diarrheal stool.
October 27th. Œdemas quite disappeared. Natural passage.

October 20th. Large furuncle on left leg. Again

severe diarrhea.

October 30th. This continues, and again strong ædema of feet. Urine normal.

November 3rd. Eats better. Œdema continues in feet and some in hands. Diarrhea alternating.

November 4th. Œdema in feet gone to-day. November 7th. Œdema of face, hands and feet. is obstinate, speaks but little, and stares around with strained, anxious gaze.

November oth. Œdemas unchanged. Has had diarrhea several times with some blood mixed with feces; is very

anxious and mind clouded.

November 10th. Diarrhea continuing to-day; strength declined rapidly; consciousness clouding more and more. At 10 A. M. he died.

Autopsy-Subdural fluid increased. Pia milky and cedematous, can easily be removed in large pieces. Brain of a very firm consistence throughout, quite moist, very anæmic, and the gyri slightly eroded on the upper surface. Otherwise nothing abnormal in the brain. Heart of natural size, valves competent and muscle walls sound. In the left pleura a considerable quantity of clear, yellowish, serous fluid; lung somewhat compressed; right pleura filled with old adhesions. Peritoneum contains a very considerable quantity of clear, yellowish, serous fluid. Liver congested and dark-colored. Spleen enlarged in all directions, firm, and cut surface smooth. Kidneys of natural size, capsule easily removed; corticalis of natural width, perhaps somewhat grayish; pyramids well defined. Stomach distended by air; mucous membrane of a yellowishwhite color, and a group of dark-colored erosions in the fundus. Intestines very pale, whitish; in the colon a couple of small follicular ulcerations. In the spinal medulla are two symmetrical cavities at the junction of the gray horns and the commissure. They do not extend beyond the gray matter, and the commissure is intact; in length they extend from the third to eighth cervical nerve.

Microscopical Examination .- Spinal cord (hardened in chromic acid and colored by carmine) is well formed and of natural size; central canal only present in the lowest part; the triangular column and the "diffuse formation" 1 of fine fibers, well marked. Pia thickened, and in the cervical enlargement, corresponding to the above named cavity formations, is found around the vessels to the anterior median fissure a deposit of round cells and considerable exudation masses at the entrance of the fissure as well as in the bottom of this, and also extending a short distance into the gray matter. The vessels within the cord thick-ened and surrounded by connective-tissue. Throughout the whole length of the cord there is in the white nerve-bundles a light connective-tissue hypertrophy of a sclerotic character; the enclosing layer of pia and its septa a little thickened, in that some of the reticulum-fibers are somewhat thicker than normal, the cells however, not appreciably enlarged. Toward the center in the internal half of the posterior columns and in the innermost portion of the lateral columns, but not in the anterior columns, the character of the affection changes especially marked in the posterior columns, in that the reticulum-cells here are considerably swollen, homogeneous and glistening, and their processes short and broken off so that no reticulum-fibers are to be seen between the nervefibers on cross section. The nerves are swollen, with the normal axis-cylinder lying at the periphery which, as preparations cleared up in glycerine show, is due to the development of Fromman's "oil globules" in the marrow. Their size varies from 0.003 to 0.13 mm., and they dissolve in creosote and certain oils, then revealing the anterior portion of the posterior columns as a reticular formation with brittle, often torn meshes.

Longitudinally, this affection extends throughout the whole cord; most marked at the cervical enlargement and nearly disappearing in the lumbar region. The gray matter everywhere cloudy, and in the central part more or less softened. In the cervical region the softening

^{1.} In a monograph on The Central Course of the Vasomotor Nerves, that I wrote last year, I described two paths in the anterior half of a transverse section of the cord, which I called the "triangular tract" and "the diffuse formation" (of fine fibers). These columns seem to contain abnormally fine fibers in all the insane, the finer the fibers the more marked their differentiation from the surroundings, and I expressed the surmise that these contained vasomotor fibers.

^{2.} C. Fromman: Untersuchungen ueber die normale und pathologische anatomie des Rueckenmarks, 1864, p. 94.

amounted to complete disintegration, with the formation of symmetrical cavities that extend from the fifth to eighth cervical nerves, and at its highest point occupies the space for the junction of the anterior and posterior horns and the commissure up to the boundaries of the gray matter, but not beyond this. Above and below, the cavities lessen gradually in size, and above the fourth cervical nerve the gray substance is substantially normal; downwards, however, there remains considerable central softening and cloudiness of the anterior gray horns. Softening arises by granular disintegration of the connective-tissue fibers. In places it spares the immediate surroundings of the central canal, but it often also, is broken down. The walls of the cavities are formed by granular masses, mixed with a few round cells, naked axis-cylinders and disintegrated ganglion cells. ganglion cells throughout the whole length of the cord are all waxily degenerated, in varying degrees, without exception. In the highest degrees they are composed of a completely homogeneous, quite pale-red mass, sometimes swollen, especially in the columns of Clark, sometimes shrunken, especially in the upper cervical region, where their number is considerably lessened. The shrinking begins as deep indentations at the edges, and at last there remains only small dentated masses, at times; there is only a pigment-deposit, and the shrunken remainder appears more plainly as a small round lump. In the beginning the nuclei are greatly enlarged, round, and with a distinct structure, and they remain thus long after the body of the cell has begun to shrink, so that a considerable disparity in size arises between them. After a time the nuclei also begin to shrink, losing their granular appearance, become homogeneous, color strongly in carmine, so that the nucleolar structure is invisible, and shrink into three-cornered masses, finally to disappear. Scattered ganglion-cells that belong to the spinal ganglia, but like emigrants, are in the posterior roots, show also a high degree of waxy degeneration similar to the cells in anterior horns. The spinal ganglia were not removed with the cord.

In this patient, who has for several years suffered with insanity of a mild form, arises therefore an acute exacerbation, an anxiety with a feeling of impending dissolution, and soon after develops a marasmus, showing itself partly

by usual anæmia and emaciation, partly by various affections of the skin, hæmatoma, phlegmons, furuncle and finally cedema accompanied by diarrhea. I doubt if the transitory, circumscribed phlegmon, can be considered a trophic neurosis, and it has therefore not been considered more; but as we have here a case of it, I shall consider it briefly. As mentioned on page 10, it seems to arise with unusual frequency in the insane, and the frequency is so much more prominent because we don't meet with all forms of phlegmon, almost exclusively the subcutaneous. The deep phlegmons on the neck, under pectoralis, in hand, etc., are at least, as rare in the insane as in others. As the skin and nervous systems are so intimately joined from embryonic life and also maintained through pathology in their relationship, it is not improbable that the frequency of subcutaneous phlegmons may depend upon the same relationship. A symmetrical appearance as in this case could also point to a central origin, and corresponding to the phlegmon's seat on the extensor surfaces of the fore-arms, the myelitic process in the cord was found to culminate at the origin of the nerves of the upper extremity, and especially at the origin of the extensor nerves of fore-arms. If this is more than an accidental coincidence, it cannot be decided by one case. The œdemas, with their quick coming and going, and lack of explanation from the condition of the internal organs, deserve our especial attention. That the alternating diarrhea and the serous exudations, which on section were found in the pleura and peritoneum, are of the same origin as the œdemas, is most probable. Pathological changes of importance were demonstrated in both brain and cord, but especial weight is due the latter as the most peripheral of the two. In the cord existed a central myelitis with a tendency to softening, involving the anterior part of the posterior columns together with the belt of gray substance uniting the anterior and posterior gray horns, so that this connection was incomplete, and at the cervical enlargement quite broken off. Hereby

considerable derangement of the reflex function of the cord must have resulted. Besides, all the ganglion-cells of both motor and sensory tracts were more or less degenerated. Muscles were not examined. There is hardly a doubt but that their wasting was due, not to a simple emaciation, but a true degenerative atrophy, as their trophic centers were in such a great degree affected. Concerning the ædemas, it is to be remarked that as a result of Ranvier's1 researches, it seems that the influence of nerve paralysis on the origin of cedemas is due to a paralysis of the vasomotor fibers of the nerve. In this case there was ædema of face, hands and feet. that part of the cord where the central softening culminated, lowest cervical and uppermost dorsal, are given off the vessel nerves to the head, upper extremities, and at times, to the lower extremities.

IV.—Primary atrophy of the brain. Marasmus. Erythema of the legs and other skin affections. Chronic diffuse myelitis with focus of softening at twelfth dorsal nerve.

Patient is a school teacher, æt. 46, with strong predisposition, who was treated for melancholia at this institution several years ago, he making an incomplete recovery. Two years ago again committed, suffering with primary brain atrophy, with greatly confused delusions of grandeur. Complete psychic overthrow came quickly with helplessness and stupor, automatic movements of arms, and marasmus. Although very voracious he emaciated to the utmost. Skin atrophic and strongly pigmented; first the arms, later the lower limbs adopted a flexed position; great muscular rigidity, increased skin and tendon-reflexes.

September 24th. On the left foot and leg to-day appeared a considerable erythematous redness and swelling. To bed.

September 26th. Lies on his back with acute-angled contracture of all the extremities, arms crossed over breast, right hand contracting rhythmically. Redness and swelling of legs considerable. On the greater part of leg has appeared large groups of closely situated vesicles about the size of hemp seeds, irregularly arranged. Eats well;

^{1.} See Vulpian, Loc. cit., II., p. 587.

passages thin and, like the urine, most often passed in bed. Pulse frequent.

September 28th. Pustules coalescing in several places, forming large pus bullæ, of which some have ruptured. On anterior surface of right femur a prominent abscess has formed, which we incised. Several small furuncles of an earlier date are distributed over the same extremity.

October 16th. On the lowest part of left leg are yet some suppurating areas and an extensive loosening of the epidermis. Spread over both lower extremities larger and

smaller furuncles continue to appear.

October 24th. Between the furuncles are now also some flabby ecthyma pustules attaining to the size of a small nut. Immediately over the sacrum and left trochanter have formed large black eschars, which do not seem to extend deeply and do not show much reaction at the circumference. On the right trochanter simply a small excoriation; lies constantly on his back. There is again severe swelling of left foot and lower part of leg, and crusts form steadily. Skin of a dark-brown on head and hands. Contractures become steadily more acuteangled and he complains bitterly if attempts are made at extension. Pulse indistinguishable.

October 26th. Condition unchanged, ceased eating

and died to-day, at II o'clock A. M.

Autopsy.—Body greatly emaciated. Some rigor, but all the limbs can be extended. "Gangrenous decubitus" over the os sacrum and left trochanter, the size of the flat hand and a silver dollar respectively. Cranium well formed, bones very thin and no diploë. The frontal suture present complete. Dura normal, subdural fluid increased. Arachnoid slightly milky in the central portion of the convexity. Subarachnoid fluid greatly increased and gathered in cisterns here and there near the median fissure. Pia can easily be removed in its entirety. Weight of cerebrum 1250 gm. Gyri of frontal and parietal lobes greatly atrophied. Brain substance as a whole very moist and dark-colored. Blood supply very limited. In ventricles nothing abnormal. Ganglia sound; arteries the same. In both lungs there are, posteriorly, fresh, croupous infiltrations. On both pleuræ soft yellow deposits. Heart greatly contracted; very small; weight 195 gm. Muscle walls dark-brown; valves sound. Weight of liver 1220 gm. Tissue dark and rich in blood, the free edge thin. Spleen firm. Kidneys also rich in blood; capsule separates naturally; corticalis narrow and on its surface a number of depressions. *Stomach* small and contracted, in circumference about the size of a small intestine; mucous membrane greatly corrugated, reddish-brown, covered by a thick layer of mucus. *Intestines* healthy.

Microscopical Examination. - Spinal cord hardened. Congenital deformities. The triangular column and the diffuse formation prominent; fibers in both red-colored. At the seventh dorsal nerve the gray mass of left side is entirely wanting, the commissure ending in a point after passing the central canal. Where the anterior and posterior horns should be is indicated by a brittleness of the tissue; only at the extremity of the posterior horn is there a small mass of gray matter between the nerve-fibers. nerve-roots there is not a trace. The lateral column is only half the width of its fellow on the other side. At the twelfth dorsal nerve again a deformity of the gray matter, the column of Clark being pulled into the posterior column, back of the commissure, yet separated from it by a broad stripe of white matter. Beside this there is, further back, another roundish gray mass also joined to the posterior gray horn and included in the posterior column, but it only contains a few small cells of indeterminable nature. The surrounding nerve-fibers have an oblique course. The abnormality has a height of only a few millimeters. Acquired abnormalities: pia slightly thickened, vessels dilated, septum anticum thickened, filling the anterior median fissure. The gray matter central softening, the ependyma throughout the whole length of cord having lost its fibrous structure and transformed to granular masses. The central canal is a mass of cells, wherein is a great number of round nuclei. This and the surrounding connective-tissue is permeated by small cell-like bodies, three-cornered or oblong in shape, 13-18 u in longest diameter, deeply colored by carmine, homogeneous and as a rule, supplied with a small round spot, looking as though the cell had bursted and the nucleus fallen out. These cells, from their size, form and distribution, seem to be Jastrowitz's "Spinnezellen" or "Arachnider," that have swollen up and lost their processes. They are present in great numbers in the gray commissure, penetrating therefrom the white; scattered, they are also found in the gray matter near the vessels. The granular transformation of the connective-tissue is, as a rule, limited to the commissure; only in the following places does it extend further, pari passu with the greater intensity of the process at the center; at the fourth cervical nerve it extends thus all through the gray matter and from here into the intramedullary portion of the nerve-roots, but at the sixth, it has again its old boundaries; at the fourth dorsal nerve it spreads out over the anterior horns but spares the posterior horns; at seventh dorsal nerve, where, as above mentioned, the left half of the gray mass is wanting, the granular degeneration again extends out over the gray matter, but in a lighter degree, and passes out in the white fibers toward the periphery; it continues thus down to the twelfth dorsal nerve, where the other deformity existed, and where the central myelitis reaches its greatest intensity. While hitherto the connective-tissue changes have not entailed deeply extending changes of the nervous parts, here there exists a state of disintegration, attacking not only the commissure, but also nearly all of the right posterior horn, and the anterior two-thirds of the posterior columns; white and gray matter, mixed with large, red-colored exudation masses, floating together without distinct limitations, in which naked axis-cylinders of the obliquely coursing posterior fibers are suspended. From the vessel canal on the right side of the commissure, bundles of tortuous and quite thick-walled vessels pass to the softened portion. The columns of Clark are destroyed on both sides; only individual cells are to be seen, and these are swollen to double their normal size. The softening disappears soon after in a downward direction, so that the parts again have their usual firm boundaries; only in the columns do the cells continue few in number, irregularly shrunken and disintegrating. Finally, in the lumbar region the granular degeneration is pronounced in the whole of the gray matter. The anterior horns are all greatly vascularized, permeated by a net of capillaries with prominent nuclei in their thin walls. They attach themselves especially to the ganglion-cells and there are in many places deposits of free nuclei by these. The ganglion cells suffer more or less throughout the whole length of the cord, deeply pigmented, a portion of them simply shrunken, with indistinct nuclei; but in a large portion of them there is a waxy degeneration, the main features resembling the description given in the preceding Case history. The waxy degeneration is found more especially in both enlargements, where it affects about half the cells; in other portions of the cord it is found only here and

there in individual cells. Its appearance corresponds therefore with the granular connective-tissue degeneration's extension to the anterior gray horns. The vascularization is also greatest here, but more evenly distributed. In the posterior horns no particular vascularization is to be seen: the cells, as a rule, shrunken with indistinct nuclei. the columns of Clark the condition alternates; in some places the cells are normal, in others shrunken, and when the softening in the adjacent parts extends over into the columns the cells first swell up and then disintegrate. In the white fibers there exists a diffuse increase of connective-tissue, passing outward from the center especially posteriorily, so that it is most marked in the posterior and pyramidal tracts. The connective-tissue of the peripheral zone and enclosing layer is, as a rule, sound; only where the central myelitis blazes up strongly and penetrates to the periphery is it found altered; the "enclosing layer" of pia is then thickened, the fibers granularly degenerated, enclosing masses of amyloid bodies. If the columns are considered individually the posterior columns are most affected throughout the length of the cord, those Burdack as well as of Goll. The reticulum-cells are swollen, their processes short and thick, the most delicate nerve-fibers gone and replaced by carmine-colored masses whose structure is not clearly distinguishable, the coarser fibers often swollen; tissue friable. At the twelfth dorsal nerve, as above mentioned, there is a considerable softening with atrophy of all the nerve fibers in the anterior threefourths of the columns and a great increase of connectivetissue in the remaining one-fourth. Down through the lumbar cord the connective-tissue hypertrophy remains very well marked. In the lateral columns there is also some connective-tissue hypertrophy with destruction of fine nerve-fibers in the pyramidal tracts, not distinctly limited to these and not constant throughout the length of the cord; while it can be clearly demonstrated at one pair of nerves, it is hardly to be distinguished at the next. In the lateral and anterior columns there is to be seen only swelling of the reticulum-cells and their processes. losing itself toward the periphery.

Nerve-roots from cervical enlargement.—The motor-roots Perineurium thickened and permeated by cells having oval nuclei, some lying singly, some in groups, and others forming complete new membranes between the old Endo-neurium greatly thickened and supplied with a num-

ber of small oval nuclei. Numerous nerve-fibers redcolored, but otherwise natural, in many of them at the
same time swelling of the axis-cylinder with gradual disappearauce of the nerve-tissue. In some of the bundles
the degenerated threads comprise more than one-half.
Here and there are also to be found closed, round bundles of delicate, reddish nerve-fibers, each bundle the size
and form of one of the thick nerve-fibers, between which
they lie spread out (newly-formed nerve-fibers). The sensory-roots also show rich nuclei-deposits in the perineurium,
while the endo-neurium is practically uninjured. The
number of fine fibers abnormally great; of the coarse
fibers, only a few individual ones are reddish-colored with
thickened axis-cylinders.

The intramuscular nerve-endings. In the coarser bundles are seen nuclei in greater than normal number, in both the peri and endo-neurium, and as the bundles divide up into plexuses and single-fibered end-branches, the number of nuclei increases, and are surrounded by rich, granular protoplasm, so that on some of the most distant branches the connective-tissue seems to consist of cells with large, oval nuclei, between which the white nerve-fiber winds forward; still is to be seen also end-branches where the nerve-fiber is enveloped by a delicate membrane with

smaller nuclei, disposed in a normal manner.

Muscles. Biceps brachii. Fibers show great brittleness and break cross-wise; part of them have a healthy appearance, but throughout they are smaller than normal, and in many this is very prominent, the fibers not filling the sarcolemma, and at last is only seen as a small, tortuous strip in the spacious sheath; this attenuation occurs without any other visible alteration taking place, except the occasional occurrence of pigment granules here and there

in the fibers and sheaths.

Besides this simple atrophy, a myositic process is to be found in some of the fibers; first, the number of nuclei increase, large, round or oval, as a rule lying singly, and with pigment granules at the poles; next the cross-marked mass is transformed into a finely dotted, dense and pale mass, which like a belt extends transversely across the fibers, and this mass finally becomes filled with muscle-corpuscles. Such belts can attain to a considerable length, or a row of them can be seen with small interspaces dividing a muscle-fiber into many parts. At a later stage the sarcolemma is filled full of the named

corpuscles, lying in finely granular masses with a suggestion of arrangement in three—four longitudinal rows; only here and there are, to be seen thin remnants of transversely-striped muscle substance; pigment granules numerous. Capillaries very numerous and filled with blood; anteriole walls contain numerous large connective-tissue corpuscles. The inter-fibrillary connective-tissue is for the greater part newly-formed tissue, from quite young, composed of spindle-shaped cells exclusively, to older, but yet richly nucleated tissue.

Sympathetic. Cervical ganglia of both sides and the two upper thoracic ganglia of one side. Interstitial connective-tissue hypertrophy; from connective-tissue areas in the center, in which are to be seen remnants of destroyed ganglion cells; broad, branched septa of wavy fibers radiate, which pierce the cell groups and nerve bundles,

spreading them apart.

The ganglion cells generally small and all deeply pigmented; many appear to be only small lumps of pigment; in some the protoplasm is pale and homogeneous, with occasional vacuoles, resembling those in the motor cells of the cord. Capsules of the cells appear as thin membranes, with nuclei on the inner surface.

Where the nerve bundles are thickly pierced by connective-tissue septa, the isolated fibers lose their nervous identity and disappear. The small vessels have a rich nuclear development in their walls, and the larger ones are surrounded by many layers of firm membrane. In the cervical region the connective-tissue development seems to be of a later date than in the thoracic, otherwise the conditions are the same.

Liver. Around all the lesser vessels a dense infiltration in the connective-tissue of small, round cells; in places complete, newly-formed connective-tissue. Between the cell rows a like infiltration but very rarely a complete connective-tissue.

Liver cells universally small. Changes are most

marked at periphery of the organ.

Kidneys. Corresponding to the depression on the surface various-sized strips of richly nucleated connective-tissue pass through the cortical substance; the glomeruli and tubules met with in their course have been destroyed and appear as shrunken remnants; from the sides of the strips, thickened septa extend in between the tubules, disappearing shortly. The convoluted tubules healthy, no

fatty-degeneration of the epithelia, but in isolated ones a pigment deposit, or collection of round colloid masses, about which the tubule winds. In the collecting tubules the epithelium is loosened in places, and lies in the tubule as an open cylinder; in places also, there are sharp curvations of the tubule walls, sometimes on both sides, so that apparently a fiber passes directly through the canal and epithelial cylinder, where the latter is intact. A number of hyaline casts in the loops of Henle.

The veins on the surface greatly dilated; an occasional thickening of the intima of the arteries is to be observed; some connective-tissue hypertrophy about the vessels in places. Several millet-seed-sized apoplectic foci in the

depths of the cortical substance of old date.

In this Case history therefore, we have an example of the severe erythemata, which in the beginning cannot be differentiated from diffuse phlegmon; considerable swelling of the foot and whole leg with deep redness not advancing to subcutaneous suppuration; on the contrary, bullæ formed on the surface and the exposed corium continued to suppurate slightly for a long time. This affection was, however, not isolated, it belonged to a long series of nutrition disturbances, acute and chronic. The preceding year had begun a general disappearance of the fat and muscle tissue, skin was atrophic and in places deeply pigmented, and the hair short and dry; patient resembled a rolled-up, faded brown parchment. In this condition the acute skin affections appeared, localized to the lower extremities, a protracted eruption of the furuncles, later mingled with ecthyma-pustules, the previously-mentioned erythyma of one extremity, and a small cirumscribed phlegmon on the other; finally appeared the decubitus; but it had the appearance of chronic decubitus that appears from long-continued pressure.

In the inner organs was found atrophy of the brain and diffuse myelitis, and in the peripheral nerves, sympathetic, muscles, liver and kidneys, a new formation of connective-tissue at the expense of the functional tissues; and as a final cause of death a double croupous pneumonia. In

this general decay it is difficult to say whether all the functional elements have contemporaneously lost their vital power and have begun a retrograde movement, or that there has been primarily an affection of a tone-giving organ, from which disease processes in other organs have been secondarily lighted up.

From the clinical history it appears that many years before there had been a brain affection of a lighter, functional nature; when this exacerbated and became destructive, and atrophy, rigidity and contractures indicated an extension to the cord, then the nutrition disturbances first appeared; this indicates that these last are secondary to a primary affection of the nervous system. The anatomical examination of this is, of course, incomplete; but even the foregoing shows such disseminated changes that from one case alone, conclusions, with reference to a more definite localization of the origin of the trophic disturbance, cannot be drawn.

Deformity of the gray matter in the cord I have found to be not such a great rarity in the insane; as Schiefferdecker has shown it can exist without symptoms; but, according to my experience, pathological processes, if present at the same time, will be especially intense on a level with the deformity, as if the tissue here had less power of resistance. The acquired pathological changes resemble those of the foregoing case. We meet again a progressive, central, softening myelitis, extending the whole length of the cord; but it has here, by its greater vascularization and cell proliferation, more of an inflammatory nature; it is especially a polio-myelitis, and next a disease of the posterior columns and pyramidal tracts. We have not here a separate systemic affection; the process is too little localized and alternates too much longitudinally for that. In the insane we find almost constantly that the affections of the cord are diffuse, if we except paretics, in whom frequently distinct systemic disease can be found.

^{1.} S. P. Schlefferdecker: Asymetrie der grauen Substanz des Rueckenmarks Archiv. f. mikrosk. Anatomie, B'd 12.

in this patient we found the disseminated affection of the ganglion-cells, with waxy degeneration of many; but here the changes were not so universal; they attacked the cells of the anterior horns and also the cells of the spinal ganglia, since the posterior roots showed degenerated fibers. This waxy degeneration I have frequently found in the insane, always in conjunction with a central softening myelitis, not in other forms, and the more acute and intense the type of the myelitis, the more pronounced the degeneration. Likewise, it seemed in these five cases, to be in direct proportion to the marasmus. Even if this should be corrobated, it is not the only cause of this condition. Here and there the myelitic process flared up with great intensity and to a considerable extent. This happened especially at the twelfth dorsal nerve, where the gray commissure and a large part of the posterior horns and posterior fibers were destroyed, and the exudate and greater vascularization indicated a greater acuteness of the process. That this was not indicated in the patient was not to be wondered at, as his psychical condition was such, that only very coarse lesions in the motor spere could have produced symptoms.

If the acute nutrition disturbances, furuncles, erythymata, etc., can be considered as symptoms of disease in the cord, they depended most likely on the softening at the twelfth dorsal nerve, partly because this was nearest, partly because this seemed of most recent date; but any special reason that the most important of the affections, the erythema, should come on only one extremity, does not appear. It is true that on the crossed side there was a malformation of the column of Clark; but the myelitis attacked the other side, and with about equal intensity. It must also be remembered that the cause might have been peripheral, in the spinal ganglia, nerve-trunks, or the sympathetic. The nerve-trunks were not examined, but as a neuritis was demonstrated in the nerve-roots and nerveendings, there cannot be much doubt but that there was also a neuritis in the concerned trunks. To go farther,

and analyze the clinical picture in its entirety, comparing it with the anatomical discoveries, would take us too far from our theme; only it must be remarked, that chronic interstitial hepatitis and nephritis are often found in autopsies on the insane, in a more advanced stage, without symptoms having been present during the life of the patients; in this patient the urine was not examined, because nothing pointed to kidney disease; but in one of the following cases an absence of albumen was repeatedly substantiated, and yet the same affection existed: in another more advanced case, there was albuminuria.

It is of course well known that an interstitial nephritis can exist for a considerable time without symptoms, so that even the albuminuria, at least, at times, can be wanting. The integrity of the epithelia in the uninjured tubules will perhaps explain this. Myositis and intramuscular neuritis belong to the rarer affections; I have found these but once before. The affection of the sympathetic and its possible relation to the pigmentation will be discussed under Case history VI.

V.—Periodic insanity. Morb. cordis. Cortical hemiplegia. Acute decubitus of humerus and diffuse phlegmon of femur. Descending degeneration of the pyramidal-tracts, and diffuse myelitis with focus of softening at the first dorsal nerve.

Patient is a peasant's wife with predisposition, spinal curvature, and stenosis and insufficiency of the mitral valves. She suffers from periodic insanity that has existed for many years; about once every month she has, together with great congestion of the head, attacks of restlessness and mental confusion, lasting about fourteen days; no menstruation. In the course of time she became very dull and stupid and presented all the signs of vessel relaxation, but the attacks continued. During one of these, three years before her death, she became suddenly unconscious, and when she recovered it was noticed that there was a weakness of the extremities on the right side, which in the following days advanced to hemiplegia, without, however,

involving the facialis; speech was good and sensibility seemed normal. In the succeeding years there developed a contracture of the right arm, which was entirely useless; there was a certain rigidity of the right leg, but not more than existed in extremities of the left side, and she could

support her weight slightly upon it.

Three years after the development of the hemiplegia, as she lay in bed with one of her accustomed attacks, there developed, without any special outer occasion, a considerable swelling with deep redness of the lame humerus, extending, in a short time, from the shoulder to a little below the elbow. A couple of days after, a gangrenous spot appeared on outer aspect of arm, and although the patient lay on a water-bed and had cataplasms on the arm, the gangrene extended rapidly up to two inches in length, and deeply into the tissues. At the same time, although there was no relation of continuity between the two affections, an erythema appeared on the right hip, which soon passed over to suppuration, pus and necrotic connective-tissue, passing freely out through an incision. The eschars on arm loosened very slowly, and the erythema extended down the femur and quite a distance on the leg; the patient became weaker and weaker until she finally succumbed, one month from the day of the beginning of the last trouble.

Autopsy.—Body small and emaciated, with considerable kyphosis. Right upper extremity flexed at an acute angle, the fingers likewise. The remaining extremities extended. About the right elbow considerable swelling and on posterior surface a large ulceration with sharply-defined edges, with some granulations, and a large necrotic part in the center; on incision into the swelling, only serous fluid exuded. On the outside of dorsum of right foot a large

blood bulla.

Cranium well formed, quite thick with little diploë. Dura has, on inner surface, on each side, a pair of light coagula, easily scraped off, and about the size of a pea; no other pseudo-membranes. Subdural fluid somewhat increased. Arachnoid slightly cloudy at the convexity, and somewhat distended by fluid. Pia can be removed but very little easier than normally. Cerebrum's weight 1080 gm. Gyri flattened, and on the upper two-thirds of the central, left, anterior convolution, and the contiguous gyri of both sides, the surface is sunken and as if wrinkled by fine furrows. At the bottom of the præcentral sulcus

is a focus of softening, where the median frontal convolution meets the anterior central gyrus, the softening, about as large as a small nut, keeps to the corticalis and occupies principally the central gyrus, but extends also a little over on to the median frontal. The softened tissue is reddish

with a mingling of yellow fat particles.

Perpendicular section through this focus reveals cystic spaces in the corresponding part of the corona radiata, parallel with the course of the fibers. Corticalis thin throughout, brain-matter soft and moist with numerous small bleeding points. Ventricles contain considerable clear fluid. In the ganglia and capsula interna nothing abnormal to the naked eye. Arteries at the base tortuous and their walls occupied by yellow thickenings; the microscope reveals fat deposits in the walls of small vessels also. Heart large in comparison with the body; apex formed exclusively by left ventricle; arterial and tri-cuspid valves sound; mitral valves grown together, leaving a small round orifice, at one margin of which is a ring-shaped ossification. On this are numerous, small, branched vegetations, firm and difficult to remove. Lungs normal. Liver large, and nutmeg-colored. Spleen also large and firm. Kidneys small; in removing the capsule a layer of kidneytissue came away with it; surface granular; corticalis shrunken to a thickness of about two mm. Mucous membrane of stomach pigmented, of a dark-gray color. tines not examined. Uterus retroverted.

Microscopical Examination.—The fresh brain and cord.— The softened focus in left gyrus central anterior was composed of granular masses, the greater part of which was fat, from small granules to small drops in size; granular fat-cells sparingly present, of nervous elements almost

nothing.

Capillary net-work very rich; veins dilated and tortuous, forming loops in places, reminding one of the renal glomeruli; walls thickened and richly nucleated, with some fatty degeneration. In places blood exudations around the vessels. From this focus a stream of granular fat-cells could be traced through the corona radiata to the upper margin of nucleus lenticularis where it divided, the main stream passing down the usual course of a descending degeneration, through the internal capsule, etc.,—while a weaker stream passed down the external capsule; that here also existed a descending degeneration, and not an accidental extension of the fat cells, is proven by the fact

that the white mass outside the claustrum was entirely free from them. The affection here seemed of a later date than in the first. In the spinal marrow, the granular fat-cells kept within the pyramidal tracts in the right lateral column down as far as the uppermost part of the dorsal region, where the substance was softened and the cells disseminated throughout; below this the cells continued in both pyramidal tracts as far as the middle dorsal region, the cord not being taken out below this because of the spinal curvature.

(To be Continued.)

CASES OF SYPHILIS OF THE BRAIN.*

By J. T. ESKRIDGE, M. D., Denver, Colo.

GUMMATA OF THE BRAIN.

CASE I.—Southey Mosley, colored, æt. 41, sailor, entered the Marine Ward of the Hospital of the Jefferson Medical College, October 10, 1883, complaining of pain in the head and dizzy spells. He knew nothing of his family history. So far as he could remember he had enjoyed good health until seven years before, when he contracted a chancre, which was single and followed by falling out of the hair. No other evidences of secondary infection were noted. He was treated for his trouble by a marine surgeon. Six years ago he was sick for three weeks with a fever, in the West Indies. After this he continued in fair health until three weeks before his admission into the hospital, when he began to suffer from severe headache, both front and back, but the pain was worse in the occipital region. About that time twitching of the muscles of the arms began. It recurred once or twice daily, lasting only a few minutes at a time. A drowsy sensation with uncomfortable feelings preceded, a sensation of brightness and general well-being attended, and a feeling of languor, or indisposition to exercise, never unconsciousness, followed the attacks. Whilst on shipboard he was blistered on the back of the neck, but without improvement. On the afternoon of the day of his admission to the hospital he had one attack of "muscular twitching" and fell to the floor, became stupid, but not unconscious. Early the next morning a similar attack

^{*} Read before the Denver Medical Association and Arapahoe County Medical Society.

occurred. Dr. Gassoway, who had charge of the Marine Ward of the hospital, and to whom I am indebted for the privilege of studying the case, sent him to my nervous clinic, the day after he had been admitted into his wards, for examination, and suggestions as to treatment. He was compelled to remain on the first floor of the hospital about two hours, and while he was there he had a convulsive seizure, which I witnessed. During an hour or more immediately preceding the attack he was quite weak and complained of feeling faint. A few minutes before the convulsive movements began he appeared dazed. He sat motionless, with dilated pupils and fixed eyes, and involuntarily passed his urine. The movements began in the arms, and were most severe in the forearms and more marked on the left side. The arms were not drawn up, but were jerked about in a violent manner. During this stage there were no spasmodic movements of the muscles of the legs or face. He sat during this stage of the attack, which lasted about five minutes, perfectly conscious, observing the violent jerking and jokingly making some remarks about it. In reply to my question during this stage of the seizure, he said that he then felt much better than he had done during the hour preceding the convulsive movements. As the jerking ceased he became helpless and unconscious, fell from his chair and his limbs and body were rigid for a few seconds. After this he lay in a limp and unconscious condition ten minutes. As this stage, was passing off he moaned and rubbed his head, and several violent spasmodic (clonic in character) contractions of the muscles of the right side of the face took place.

Condition at my examination October 11, 1883:

He is unnaturally dull of comprehension, has some loss of memory and thinks and talks exceedingly slowly. There are no delusions nor delirium. There is no paresis or paralysis of the leg or arm muscles, although he says that the left arm occasionally becomes weak, and at those times he is unable to hold it at right angles with his body.

The weakness of the arm does not last more than a few minutes at a time. The lower portion of the face is paralyzed on the left side. The eyes can be opened and shut at will. Ordinarily the tongue is protruded in the median line, but when he endeavors to effect extreme protrusion it invariably deviates to the right or non-paralyzed side. The muscles moving the uvula are apparently not affected. The pupils are equal in size and appear normal. Taste, smell and hearing unaffected. Sight: Right eye, vision 20 Hyperæmia of the optic nerve in the upper and inner quadrant. No hemiopia. Left eye, vision 20 ?? More marked hyperæmia and swelling of the whole disk. but fields remain normal. General sensation and its subdivisions normal. The diagnosis was gummatous tumor of large size at the base of the brain effecting pressure on the crura, and large doses of potassium iodide were recommended. Dr. Gassoway placed him on small doses of this salt in combination with one-third to one-half gr. of corrosive sublimate, given thrice daily. Enormous doses of the latter constitute his favorite treatment of brain syphilis. Improvement began at once, and within two weeks after beginning treatment he felt so well that he persisted in leaving the hospital and giving up further treatment. He was urged to remain and continue the medicines. Nothing more was heard of him until November 10, about two weeks after leaving the hospital, when he was brought back in an unconscious condition. It was learned that during these two weeks he had been quite well until the day of his re-entry, when he was seized with a severe and general convulsion, followed by profound coma, in which condition he died about twenty-four hours later.

Sectio Cadaveris.—A thorough examination of all the viscera was made about seventeen hours after death. The heart, lungs, liver, kidneys and spleen were found in nearly a normal condition.

Brain.—The dura mater is not deeply congested nor abnormally adherent. It seems unusually distended, indicating an increased volume of its contents. The pia

is deeply congested and its veins distended to their full capacity. The convolutions of the entire brain are pressed together and flattened. On the convex surface the consistency of the brain substance is nearly normal, both sides presenting a similar appearance. At the base, the posterior, two-thirds of the anterior lobe and the anterior, one-third of the temporo-sphenoidal lobe, on the right side, are softened and fluctuating. At the optic commissure, the softening extends over the median line and involves the left side to a slight extent. On the right side, the softening extends from the pons, which is apparently not affected to within one inch of the anterior tip of the anterior lobe. The anterior lower portion of the right crus is soft, the left is congested, but apparently not softened. Evidences of pial inflammation are found extending over a large portion of the base of the brain. The greatest amount of softening is at the junction of the anterior and temporo-sphenoidal lobes, right side, where an undefined mass of grayish, glistening, gummylike substance is found. This mass is one-fourth of an inch thick and about two inches in diameter. The softening and deposit involve the olfactory and optic nerves, and extend to, but do not, apparently, affect the third pair. On opening the lateral ventricles from above by sections through the corpus callosum on each side of the median line, the surface of the left presents a normal appearance, but the anterior portion of the right, extending from the anterior tip of the corpus striatum (which is affected) to the anterior extremity of the ventricle, the appearances that exist on the base of the brain below are found. Beginning at the posterior extremity of the right corpus striatum and making from within outward thin vertico-transverse sections through it, no involvement of the ganglion is found until the anterior tip is reached, where not more than a fourth of an inch is softened.

There are a few points in this case that deserve further notice. It will be remembered that the movements

began in the arms and remained limited to them throughout the real convulsive seizure. No twitching of the muscles of the face were observed until several minutes after they had ceased in the arms. These phenomena differ widely from what we witness in a case of Jacksonian epilepsy due to a cortical irritant or lesion. In Jacksonian epilepsy the convulsive movements begin in a group of muscles on one side of the body, and gradually involve, as a rule, all the muscles of the extremities. sciousness results as soon as, or before the bilateral movements become general. In cases of very slight irritation of one side of the cortex, the movements may be limited to the unilateral group of muscles first affected, and no unconsciousness result. In the case I have just reported the movements began at the same time in both arms and were not followed by a general convulsion. argued that the lesion was below the cortex, and anterior to the pons and medulla, as the facial paralysis and temporary paresis of the arm both occurred on the same side. From his history of syphilitic infection, I thought the lesion was probably a gummatous deposit in such a position at the base of the brain as to involve, directly by pressure or indirectly from the resulting inflammation, the fibers from the internal capsule as they pass through the crura cerebri. In the peduncles or crura the motor fibers, after having passed through the anterior two-thirds of the posterior third of the internal capsule, occupy their median and inferior surface, and are in a position to be irritated by inflammatory or syphilitic deposit in the peduncular region at the base of the brain. If the irritation had been limited to these portions of the crura, the resulting phenomena would have been almost the same as would result from a direct irritant applied to the nerves supplying the muscles involved in the convulsive seizure. In this case the large extent of basilar surface of the brain affected by the lesion masked, to some extent, the motorial disturbance and caused the attack to simulate, in some of its phenomena, one of epilepsy.

I was disappointed in not finding the third nerve involved during life, but the *post-mortem* showed that it had escaped.

There was one curious feature in this case, viz., Deviation of the tongue, on extreme protusion, to the sound, and not toward the paralyzed side of the face, as is almost universally the case. This is the first and only time that I have seen the tongue deviate to the sound side, and am at a loss how to account for it. I think I have seen a reference made to it by Dr. Spitzka, of New York, but of this I am not positive. The only possible explanation that I can think of, excluding unequal attachment of the tongue to the floor of the mouth, is, that the motor fibers from the brain, through which the hypoglossal nerve is controlled, must have been more damaged in their passage through the crus on the left side than they were on the right. The explanation is the more plausible when we take into account that the motor disturbance was due to lesions in the crura, the left being congested, the right softened. I should add that no microscopical examination was made to determine the condition of the motor fibers in the crura. I saw the patient only once before his death. Had he been carefully examined before his second admission into the hospital, several of the special senses would have been found affected.

The prompt and rapid improvement so soon after beginning the antisyphilitic treatment, seems remarkable, but it is only what is often witnessed in cases of brain syphilis, when the treatment is energetically pushed to the point of toleration. It has been my invariable custom to treat these cases with large doses of potassium iodide, beginning, if great danger to life seems imminent, with twenty to thirty grains thrice daily, and rapidly increasing to the point of toleration. In cases where the symptoms have appeared less urgent, I have begun with ten grains three times daily, and increased the dose one or two grains daily until the desired result has been attained.

In the latter class of cases I have usually given from one-thirtieth to one-twenty-fourth of a grain of corrosive sublimate with each dose of the iodide. I have no experience with such large doses of corrosive sublimate as Dr. Gassoway is in the habit of administering. He told me that he frequently relied on this medicine alone and got very good results from it. It does not seem to me to offer any advantages over the iodide, nor to be as safe.

Every physician who has had much experience in treating syphilis realizes the importance of continuing the treatment long after all symptoms of the disease have passed away. The after-treatment is a special necessity in dealing with brain syphilis. Had the patient, whose history I have given, continued under treatment for months after he began to feel so well and determined to leave the hospital, it is probable that his life might have been prolonged several years.

H. C. Wood prefers calomel to potassium iodide in the beginning of the treatment of brain syphilis, if the patient is not too greatly reduced. He advises one-fourth gr. doses of calomel, guarded by opium, given every two hours, until the gums are slightly affected, then a milder course of mercury, and subsequently, the potassium iodide pushed to the point of toleration.

Syphilitic Pachymeningitis with Hemorrhage.

Case II.—E. P., male, æt. 35, Irish, bartender, first came under my care in March, 1883, when he was brought to the St. Mary's Hospital, of Philadelphia, in an unconscious condition. I was unable to learn anything of importance concerning his family history. He had led an irregular dissipated sort of life and drank freely, often to the point of prolonged intoxication. He had had two or three attacks of gonorrhæa, and contracted a chancre eight or ten years before. The secondary symptoms of syphilitic infection had been well marked. During the two or three

years previous to my seeing him he had suffered more or less with headache. One week prior to his admission into the wards of the hospital, after a prolonged debauch he had a convulsion, became unconscious and remained in a semi-conscious state until he was brought by his brother to the hospital. I learned that twitching of the muscles of the right leg, and to a less extent of those of the right arm, had occurred from time to time after the convulsion.

At the time of my first examination he was in a stupid semi-conscious state. Temp. 100°; P. 110; R. 28. There was no decided paralysis, although the right leg seemed weaker than the left. He was placed on large doses of potassium iodide, and within a few days was sufficiently improved to be able to answer questions, but at night he was more delirious and required an attendant to keep him in bed. None of the special senses were affected, neither was there any disturbance of general sensation. The right leg was weaker than the left, and the right arm, while about equal in strength to the left, was used clumsily. There was no difference in the appearance of the two sides of the face, and the tongue was protruded in the median line. He remained in St. Mary's Hospital during the month of March, and at the end of that time was transferred to my wards in the Hospital of the Jefferson Medical College. At the end of the first month's treatment his general stupid appearance had disappeared, but the right leg was weak and the foot dragged a little in walking. During the day his mind seemed quite clear, but in the early part of the night he would become noisy and sometimes pugnacious. It was not until he had been kept under treatment nearly three months that he appeared to have regained his usual health, and even then, the right leg was not as strong as it had been. He finally left the hospital, and the last that I heard from him he was doing well. He was requested to continue the medicines, in comparatively small doses, intermittingly for a year or longer. The treatment, in this case, consisted, at first, in full doses of potassium iodide, and as soon as improvement ceased to

be apparent, mercury was added. He bore the potassium iodide in large doses, and took more than three drams daily for nearly two months. As he regained his normal health his toleration for the drug in such large doses ceased.

I am inclined to think that the pathological condition in this case was a chronic syphilitic pachymeningitis, localized over and around the upper extremity of the fissure of Rolando, on the left side. It is probable that a meningeal hemorrhage in this locality was the immediate cause of the convulsion. A gummatous deposit would explain the symptoms, but the acute onset, as shown by the convulsion and profound coma, would point to hemorrhage rather than to a syphilitic deposit being the determining cause of the outbreak of the disease.

Had I seen this patient within a few hours after the convulsion, it is probable that I should have endeavored to relieve his brain by venesection.

CHRONIC PACHYMENINGITIS FOLLOWING SUN-STROKE AND Syphilis.

CASE III.—Edmond J., male, aet. 32, Irish, produce dealer, came under my care October 2nd, 1882. His father died of apoplexy, and mother, suddenly, probably of same trouble. Of their habits I could learn nothing. Brothers and sisters well. Edmond suffered from gonorrhea and syphilis before he was twenty years old. About four years before I first saw him he was affected by exposure to the heat of the sun and had to stop work for some time. Since then he has experienced, as his brother expresses it, queer feelings in his head, especially after drinking heavily. During these four years, he has been periodically a hard drinker. He gets drunk and remains on a spree for a week or more, then he keeps sober, abstaining from the use of alcohol in any form for four or five months, when the spree is again repeated. It seems impossible for him to take one drink without

indulging until he gets drunk. During his bouts, or what is termed the times of his queer feelings in his head, he becomes very low-spirited, thinks he is going to die, but does not complain of much pain in his head. From the history, as I first obtained it from his brother, the lowspirited condition followed the sprees, but from the patient's own account of them, given afterward, the feeling preceded as well as followed the debauches. He leads a very irregular and dissipated sort of life. He is always irritable and often gets into fights. Two or three years before he first came under my care, while very drunk he got into a row and was badly bruised about the face, disabling him for several weeks. His brother stated that he never drank to excess until after he was affected by exposure to the sun. During the afternoon of October 1st, the day before I saw him, he was brought to the hospital and presented a wild staring appearance. At 9 P. M., he became irritable and could not be induced to retire to his bed for the night. Soon he began to yell at the top of his voice, and was the source of considerable annoyance until quieted by a sleeping potion which was forced in him. His temperature was not taken. He had been drinking freely the night before his admission to the hospital. The next morning he seemed quiet and appeared better, but the thermometer in the axilla registered 102.5°. About 4 P. M. I first saw him. He was in bed, but required the constant presence of an attendant to keep him there. His eyes were wide open and fixed, the pupils slightly dilated but equal. There was no paralysis, paresis or delirium. He took no notice of anything but seemed to gaze into vacancy. He did not resent pinching and pricking of the skin. He could not be induced without force to eat or drink. If he were the subject of delusions their nature could not be ascertained, as it was impossible to get him to speak. His temperature still remained at 102.5°. He was immediately placed on large doses of potassium iodide in combination with mercury. Quinia had been given before I saw him and was continued

for a time. The next day he was more rational and able to give a short account of himself, but after talking a short time, he became confused and was unable to continue. His answers were uttered slowly but accurately. If he tried to talk rapidly he soon became confused and had to stop to collect his thoughts. October 3, T. 101; P. 120; R. 32. About noon, without any rise of temperature, his pulse suddenly ran up to 152 and the respirations to 60. He seemed to be rapidly sinking and could not be induced to speak. His eyes were open and pupils widely dilated. He appeared to be entirely unconscious, and passed his water in bed. He remained in this condition about twelve hours. The next morning, October 4th, T. 101.8°; P. 128; R. 28. He was able to speak and gave accurate answers to questions, but if left alone he soon began to talk at random. By noon of the same day the axillary temperature was 104°, rectal, 105°. His head temperatures, with the exception of the frontal stations, were all abnormally high. He was quite rational, free from delirium and took large quantities of liquid nourishment, notwithstanding his temperature was so high. During the afternoon his temperature fell one degree and he perspired freely.

On the morning of the 5th, at 9 A. M., T. 102°; at 10 A. M., 104.4°; P. 108; R. 34. Head temperatures, except those of the frontal stations, very high. There was decided spasmodic twitching of the muscles of the hands, and marked tonic contraction of the fingers. While he was in a free perspiration his temperature was gradually rising, although he seemed much brighter than when his fever was less. At my noon visit I found him a little stupid and inclined to sleep. His face was deeply congested and he was perspiring freely over face and neck, but his body and limbs were dry. The axillary temperature was nearly 105°, and bronchial rales were audible throughout both lungs. During the afternoon his temperature descended to 102°. His bowels were inclined to be constipated and an occasional laxative was required. The tongue was dry at the

height of the fever, but never presented any marked appearance. The loss of flesh was moderate. October 6th, 9 A. M., T. 101.3°; P. 98; R. 26. He was entirely conscious and did not suffer from pain. There was no muscular twitching. The face and neck were covered with perspiration all day. 6 P. M., T. 103.4°; P. 102; R. 30.

October 7, 9 A. M., T. 100.3°; P. 100; R. 25. His general condition was much improved.

October 8, 9 A. M., T. 99.3°; P. 70; R. 24.

- " 8, 6 P. M., T. 103.8°; P. 98; R. 28.
- " 9, 9 A. M., T. 100.6°; P. 94; R. 26.
- " 9, 6 P. M., T. 101.2°; P. 98; R. 28.
- " 10, 9 A. M., T. 98.8°; P. 84; R. 22.
- " 10, 6 P. M., T. 98.6°; P. 84; R. 20.
- " 10, 12 M., T. 98.1°; P. 84; R. 20.

During the next ten days there was a steady improvement, and his temperature at no time exceeded 100°.

On October 23, one week after he left the hospital, he was feeling and looking well and had gained flesh. He had no headache, his mind was clear, and his bowels, which had been constipated, were regular. The iodide and mercury were continued and he was requested to report at the end of another week.

October 30, he was feeling quite well, better than he had for a year or more prior to his admission to the hospital. He reported that he slept well and his appetite was good. His morning temperature was 99.4°; P. 80; R. 16. He said that he perspired freely at night soon after retiring, and thought he had been having slight fever during the latter part of the afternoons. He was ordered, in addition to the antisyphilitic treatment, twelve grains of quinia and eighteen drops of 'aromatic sulphuric acid daily. He did not report again.

This case (No. 3) presents several interesting features. The first is a medico-legal one and relates to the probable connection between his drinking habits (during which he was very quarrelsome and inclined to attack anyone who opposed him) and the sun-stroke from which he had

suffered. Dr. Crothers, of Hartford, Connecticut, has reported numerous cases of uncontrollable periodic drunkenness, following traumatic and other gross lesions of the brain, in persons who before had led sober and exemplary lives. There are very strong reasons for believing that this man's habits of beastly intoxication were due to the morbid effects of heat.

There was some doubt as to the diagnosis. My resident physician, a bright young man, supposing the case to be one of malarial coma, had placed the patient on full doses of quinia before I saw him. I soon satisfied myself that the irregularity of temperature and other symptoms warranted us in treating him for brain trouble, possibly of a syphilitic nature, although I was strongly of the opinion that the case was complicated by malaria. The extremely irregular exacerbations of fever at any time of the day, local sweating, occasional states of unconsciousness and collapse (the sweating, condition of the mind and collapse apparently having no relation to the temperature fluctuations) pointed to some serious brain affection. I have, on several occasions, observed cases of brain trouble with fever tracings resembling those of malarial fever.

The history of this case is incomplete, as there are no post-morten results to describe; but, I think, we may profitably speculate concerning the nature of the brain lesion. In studying the clinical history the first question that suggests itself to my mind is, might we not explain all the symptoms by a chronic pachymeningitis, caused years before, by exposure to the sun, and would not the explanation be all the more plausible in the event of malarial complication? I think the combined action of pachymeningitis and malaria are sufficient to account for the symptoms to the exclusion of syphilis. Because the man had had syphilis and fairly recovered under the use of antisyphilitic remedies is no positive proof that the brain lesion was of a syphilitic nature. That the exposure to the sun did cause decided brain trouble is quite evident from the change that took place in the man's

habits and disposition immediately after the accident. It is well known that cases of chronic pachymeningitis in which there is no probable trace of syphilis do improve under a prolonged course of potassium iodide and mercury. It is probable that equally good results might have been accomplished in this case had smaller doses of the iodide been employed, but in every instance of this sort I have preferred giving the patient the benefit of the doubt and pushing the remedies vigorously until milder measures seem safe.

THREE CASES OF SYPHILITIC ARTERITIS OF THE BRAIN.

CASE I.-Mr. M., single, bookkeeper, æt. about 40, was referred to me the latter part of December, 1888, by Dr. Oglesby, of Manitou, Colorado. He has led rather an irregular life and indulged in indiscriminate sexual intercourse. He says that he has been in the habit of drinking moderately of alcoholic liquors, but has never drank to excess. He enjoyed good health until 1874, when he contracted a hard chancre, which was followed by secondary symptoms. During the last two or three years he has not been feeling very well, but the symptoms have been illy defined; body and mind easily exhausted, and he thinks his memory has gradually failed. In the latter part of the afternoon of May, 1888, after writing several letters, he felt unusually tired and nervous, but walked to his boarding-house, about a mile distant from the office. He ate a light supper, and in leaving the dining-room felt dizzy, and had to support himself against the door for a few seconds to prevent falling. He experienced a numb sensation in his right arm, and his speech was thick and difficult. He went into the open air, and after remaining there for some time, most of the unpleasant symptoms passed off, but he did not feel in his usual health until several days afterward. A short time after the first attack, he had a similar one, except in the second one the numb sensation in the arm was more pronounced and

of longer duration. In July, 1888, during a game of billiards in which he was engaged in playing, and while waiting for his opponent's play, he again experienced a numb sensation throughout the right arm. He found it very difficult to finish the game because of his inability to guide his cue. Speech was thick and his right leg soon began to feel numb. I am uncertain whether he was completely paralyzed on the right side at any time, but immediately after the leg became numb he was unable to walk. He was taken to his room, his helpless condition increased and he lay speechless for several days. Consciousness was unaffected in all the attacks. He does not seem to have recovered from the last seizure. Headache. which before had been occasional, has become more diffused over the head and nearly constant, and he has steadily lost flesh and strength.

Examination December 23, 1888. He is feeble, anæmic, considerably emaciated, and his complexion dark, sallow or muddy. He complains of a dull, heavy, diffused headache, worse in the erect posture, dull pain in lower portion of back, loss of appetite and strength, sleeplessness and difficulty in walking. There is some difficulty in articulation, but it seems to depend upon a clumsy condition of the tongue, and not on account of aphasia. The tongue is protruded in the median line. Guttural and purely labial sounds are fairly well articulated, but the lingual and linguo-labial give him the most trouble to articulate distinctly. The lips are closed well and there is no dribbling of saliva from the mouth. He says that his right arm and hand are weaker than the left, but on testing the strength of each with the dynamometer, I find the right registers 20; left, 18. I am unable to discover any distinct inco-ordinate movement of the arms or hands. He does seem to be a little more awkward with the right hand than with the left, and as he is right-handed the difference is noticeable to him and makes him think the right hand is the weaker. His gait his unsteady and awkward, but not ataxic. If he undertakes to move quickly, as in turning

around or going from one chair to another, without first steadying himself, and apparently preparing himself for the effort, it is with difficulty that he maintains the erect posture. He seems to have but little trouble in walking slowly. With eyes closed he can stand, or turn around if not hurried in his efforts to accomplish the latter. Once I requested him to turn around rapidly, but in endeavoring to do so, the right leg became entangled with the left, and I had to support him to prevent his falling. I find that it is just as difficult for him to turn around rapidly with eyes open as it is with eyes shut. The knee jerk is absent in each leg. The cremaster and iritic reflexes are normal. Impressions, as pinching and pricking, made upon the legs, seem to be perceived by him as quickly as is normally the case. When he has his cane or anything else to give confidence in his ability to prevent falling, his movements are less embarrassed. The pain in the back is found to be in the lower lumbar region. It is increased by movements, especially in the stooping posture. He says the muscles of the lower portion of the back appear stiff. He occasionally has shooting pains down the legs. The sense of touch is but slightly changed from normal. Two points of the æsthesiometer are more clearly recognized on the left side, but hot and cold substances he thought he could more clearly distinguish on the right. Muscular sense is preserved. He is emotional and hysterical. This condition he realizes and it annoys him, as he often apologizes for his actions by saying he sometimes gets quite hysterical. He reasons well, but appears to think slowly. He says his memory is failing him. His appetite is poor, stomach disordered and bowels constipated. There is no kidney complication. Electrical reactions are normal.

Case II.—Minnie E., German, married, æt. 29, was referred to me by Dr. Clough, in November, 1888. At the time of her marriage, some three years ago, her husband was suffering from the secondary manifestations of syphilis, and she shortly after had an eruption on the

skin. I learned that Dr. Blickensdorfer had treated her for syphilis. Dr. McLauthlin, who was called upon to attend her in May, 1888, has kindly given me a short account of her trouble at that time. She was first seized with numbness and paralysis of the left arm, but, a few hours later, when Dr. McLauthlin first saw her, the right arm and leg were paralyzed and felt numb. She was able to use the left arm. The right lower portion of the face was paralyzed and the tongue deviated to the left. There was partial anæsthesia on the right side, she was unable to speak, but consciousness was unaffected. She soon began to improve and within a few weeks was able to walk about the house, although the muscles on the right side remained weak, and speech was imperfect.

Examination, December 5th, 1888. The right arm is smaller and much weaker than the left, and the flexor muscles of the right fore-arm are beginning to exhibit slight spastic contractions. With dynamometer, she registers, R. 15; L. 30. She walks with extreme difficulty on account of the right foot being held in a position of equinovarus. The extensor muscles of the leg are weak, but there is no perceptible spastic contraction of the thigh muscles. The calf muscles are quite firmly contracted, and the tibialis anticus slightly so. The face is straight and the tongue is protruded in the median line. Articulation is not as distinct as it was before the attack. The extensor muscles of the toes and the peronei muscles require a little stronger current to produce contraction than do those of the left leg, but there is no reaction of regeneration. The right knee-jerk is greatly exaggerated, the left, normal. Muscle, tactile and temperature sense all preserved, as are also taste, smell, hearing and sight.

She has lost, according to her own statement, some twenty pounds in weight, and is weak and anæmic. My diagnosis is syphilis affecting the vessels of the brain and causing hemorrhage into the posterior portion of the internal capsule. It would make the case much more interesting had the special senses been carefully tested at the time of

the occurrence of the paralysis. At her first visit I placed her on small doses of mercury and increasing doses of potassium iodide carried to the point of toleration, about forty grains thrice daily. She has rapidly improved in strength and general appearance, has gained several pounds in weight, and the paralysis is less pronounced.

Case III.—In October, 1887, a man, æt. about 35, who had just come from Denver, was found at the railroad station at Colorado Springs. He was in a semi-conscious condition and scarcely able to stand. He was taken to the County Hospital, where he died two days later. He was unable to give any account of himself. Consciousness was soon entirely obliterated, coma deepened and he was unable to move a muscle of his body. The urine was free from albumen. He was seen only once by a physician while he was in the hospital, and no critical examination of his condition was made.

A few hours after death, at the request of Dr. Strickler, I made an examination of the brain, heart and lungs. On account of insufficient time, the other internal organs were not examined. The heart and aorta presented nothing abnormal, and the lungs only a condition of passive congestion.

Brain.—The skull cap was normal in appearance and presented no evidence of bone disease. The sinuses and vessels of the membranes were filled with dark fluid blood, but there was no plugging of these vessels. On removing the membranes the brain was found to be so soft as to flatten like a mass of jelly. Nearly every artery of the brain, both large and small was diseased. Their walls were thickened and their calibers narrowed. A thrombus was found in the posterior cerebral on the left side and one in each anterior cerebral. Several of the nutrient arteries, especially of the great ganglia at the base of the brain, were closed. I removed most of the large arteries and many of the nutrient arteries and have them here to-night. I think this specimen of syphilis of the vessels of the brain is the best I have seen. Some of the vessels present nodosities or

gummatous swellings on their external coats, while the walls of others appear to be thickened by deposits on the middle and internal coats. It will be observed that scarcely any of the vessels are diseased throughout their entire length.

On cutting into the brain in various directions it was found to be more or less softened. The left corpus striatum was a jelly-like mass, and the right greatly broken down, but to a less degree than the left.

The description of the cases reported to-night has already increased my paper to too great a length, but I wish, in closing to say a few words concerning syphilis of arteries of the brain. Years ago Hughlings Jackson, Wilks and others called attention to the presence of nodosities or gummatous swellings on the outer coat of the cerebral vessels, which increased the thickness of their walls to three times their normal, lessened the size of the caliber of the vessels, and thus gave rise to softening of the brain in areas. Hughlings Jackson thinks "A random succession of nervous symptoms" should lead one to suspect brain syphilis. Atheroma affects principally the large arteries of the brain, while, according to Heubner, syphilis affects the large and small size arteries, but mainly the medium and smallsized ones. Gowers states that "as an isolated change (apart from massive syphilitic growths) it is almost always confined to the larger arteries of the base." It seems to be settled that syphilis of the arteries is a common form of syphilis of the brain. The poison gives rise to an arteritis, involving, by gummatous infiltration, any or all of the structures of the vessel, but probably more commonly the external and internal* coats, leading to narrowing or occlusion of the caliber.

The period after the system is infected with the syphilitic virus before the arteries of the brain become affected, varies from a few months to many years. Syphilitic arteritis of the nervous system is usually a late manifestation of the disease. The common period is from three to ten

^{*} In the endarteritis of Heubner the nuclear proliferation usually begins between the tunica intima and the internal clastic membrane.

or twelve years, although it is in some cases twenty years or more. Leyden has reported a case that occurred one year after the chancre. In rare instances the brain has been affected within one or two months after the occurrence of the chancre, but I am not aware that an opportunity of a *post-mortem* examination has enabled anyone to determine whether such early manifestations of brain symptoms are due to an affection of the arteries.

Instead of making a snap diagnosis of syphilis of the brain, or of certain structures of the brain, as of the arteries, it is important to first determine whether our patient's trouble is due to syphilis. For this the nervous and mental symptoms are not always sufficient. The history, the condition of the patient's body and the possibility of heredity, should be taken into consideration. In the discussion of a recent paper on syphilis of the brain, read by Dr. Fisher, of New York, Dr. W. A. Hammond called attention to the importance of examining for tenderness at the junction of the sternum and ensiform cartilage. It should be borne in mind that hereditary syphilis may not manifest itself before the twentieth year. Gradual failure of memory is an important symptom of syphilis of the brain, especially of the arteries. Headache, very frequent and severe in gummata of the brain, does not seem to play an important part in disease of the vessels, and if present is not usually localized unless the meninges are irritated. If a person is suffering from syphilis and has gradual loss of memory, extending over a period of one or more years, without severe and localized pain in the head, with rapidly changing paralysis, although one or more limbs may become permanently crippled, especially if associated with aphasia, I should feel justified in diagnosing syphilis of the arteries of the brain.

THE MOODS OF THE SANE.*

A POSTHUMOUS PAPER.

By J. MILNER FOTHERGILL, M. D.

A SYLUMS for the insane serve several useful ends, and among others are excellent places for the study of the workings of the mind of different mental states and attitudes. The grandiose delusions of the general paralytic, the voluble chatter of talkative mania, the incohorent ravings of acute frenzy—broken fragments of uncompleted thoughts—all chaos, the stony features of silent religious despair, and the deep depression of melancholia, all tell of different mental states resting casually upon certain material conditions of the brain. Having studied the moods of the insane, what may be called their grosser manifestations, it becomes all the easier to study the finer and subtler manifestations of moods in the sane.

Moods must be differentiated from the various natural inherited traits which constitute what is known as the "disposition."

One individual is naturally light-hearted and joyous; while another is taciturn and sedate; a third seems steeped in sadness; a fourth is bold and adventurous, while a fifth is timid and hesitating. These traits are recognizable in every member (perhaps not equally so in all) of each family. One family is haughty and aggressive. Another is patient and wily; in another there is marked religious feeling; in another business capacity is exhibited; in each case there is a family likeness. Such then may be called

^{*} The many admiring friends of the lately deceased author will, we are sure, appreciate the subject, as this distinguished writer has treated it so well, and we take pleasure in giving place to this paper, the manuscript of which has been transmitted to us by his widow, as a memorial of his acknowledged literary industry and professional zeal.—EDITOR.

family traits, or the "disposition" of the individual. This contains the ground-work of the character.

Then there comes the matter of individual experience affecting the mental attitude. Success tends to fortify self-confidence; the want of it leads to a lessening thereof. A man as he pursues the path of life learns to have faith in himself, or loses what of it he had to start with. A man "cannot leap from his shadow," nor cast his past behind him, as a serpent glides out of its cast-off skin. The past weighs on the mind and tends to prove a habit, as Griesinger says of the insane; and this is true, if to a less extent, of the sane, who can

"Minister to a mind diseased, Pluck from the memory a rooted sorrow, Raze out the written troubles of the brain?"

We are in some degree what experience makes us, as well as what we are by inheritance.

Then the habitual dietary is not without its effects. The enduring courage of the British soldier and sailor has always been held to be linked with the beef that he eats. Frugivorous races are more peaceful than carnivorous races, just as are the herbivora as compared to the carnivora in the brute world.

Liebig said: "It is certain that three men, one of whom has had a full meal of beef and bread, the second one of cheese or salt fish, and the third potatoes, regards a difficulty which presents itself from entirely different points of view. The effects of the different articles of food on the brain and nervous system is different, according to certain constituents peculiar to each of these forms of food."

The old rule for recusant stubborn youths was a regimen of bread and water, which mitigated their obstinate mood effectually. In reformatories it has been found that with weak-willed boys an ample dietary with wine is essential to strength of purpose. Why Therrilees evidently thought on the sane lines when she insisted on Dominie Sampson having some of the contents of her caldron at

the Kairn of Derncleugh: "Sae ye hae eat naething a' day," she said, helping him liberally; and on the Dominie expostulating, she insisted, "There is what will warm your heart;" on further refusal she exclaimed, "If ye dinna eat instantly and put some saul in ye, by the bread and salt I'll put it down your throat." Then she followed up the meat with a dram, whereupon the Dominie declared "he felt mightily elevated and afraid of no evil which could befall unto him." She watched the effect of food and drink with satisfaction, saying, "I ken by the cast o' your e'e that ye're anither man than when ye cam in."

Scott knew the difference between a full and a fasting man as regards strength of purpose. There are then the temporary effects of food and permanent effects of the dietary. Shakespeare knew the effect of good nutrition and had it in mind when he made Cæsar say:

"Let me have men about me that are fat, Sleek-headed men, such as sleep o' nights; Friend Cassius has a lean and hungry look; He thinks too much; such men are dangerous."

The effects of generous food and wine upon the mood is recognized in the time-honored custom of "charity dinners." When it has become desirable to unbutton an Englishman's pocket the best way to do it has been found to get at his feelings through his stomach. As the rich juices pour into his blood and flow through his brain his mood changes; he feels glorious. Dr. Lauder Brunton, F. R. S., gave recently a graphic account of the effects of a city dinner upon himself. He says, "I went to the dinner exhausted with over-work, irritable in temper, and believing that city companies were wasteful bodies who squandered money that might be employed for useful purposes, and that they should be abolished. I came away feeling strong and well, with an angelic temper, and firmly convinced that city companies had been been established for the express purpose of giving dinners and ought on no account to be interfered with. Nor was the good

thus effected of a transitory nature; the irritability of temper which had disappeared in the course of dinner did not return, and the morning afterwards, instead of awaking with a headache and depression, I awoke strong, well and ready for work, and remained so for a considerable time."

This last proves (if such proof were necessary) that Dr. Brunton's change of mood was not simply alcoholic, but was the effect of a good meal. The "city companies" may be doomed, but the practice of a good dinner before a subscription list will long survive. It may not be a noble reflection, but probably one charity dinner is worth two charity sermons. A feast among the old Saxons was the recurrent mark of some important event, and dining together has always been held to promote good fellowship.

When the brain is well fed it has a sense of well being; when it is ill-supplied with blood it is irritable, miserable and despondent, i. e., psychical pain, the well-fed man is hopeful, enterprising, firm of purpose, and "sanguine." The derivation of this last word tells of the material relations of the moods. "Sanguis, is "blood;" "sanguineous" was given to fight or shed blood. A "sanguinary mood" is a blood-shedding mood; and a "sanguine mood" is a hopeful state of mind, from the brain being full of healthy blood.

And men have their "fighting days." Scott tells how Rob Roy, courageous and reckless enough, as a rule, once was in no "fighting mood." No doubt this was due to some disturbance in the vascular supply of the brain, as well as to the position he was in.

The effects of alcohol in filling the brain with blood are well known. In old days the English spoke of "Dutch courage," the courage born of alcohol, a distinct libel on the bravery of the Dutch. "Pot Valiant" was another term denoting the action of alcohol.

The effects of excess of alcohol are well known. The over-stimulation is followed by a state of exhaustion and depression, as recognized in the term "the day after the

fair;" and the effects of some more alcohol as "taking a hair of the dog that bit you," i. e., the altered state of the brain by being once more freely supplied with blood.

Macauley has given us a brilliant sketch of the varying moods produced by alcohol, the stimulation and the reaction. Sir John Preston was a prisoner for being concerned in some Jacobite plots in Dutch William's day. "He went for a time irresolutely to and fro; he listened to his brother Jacobites and his courage rose. He listened to the agents of the government and his heart sank within him. In an evening when he had dined and drank his claret, he feared nothing. He would die like a man, rather than save his neck by an act of baseness. But his temper was very different when he woke the next morning, when the courage which he had drawn from wine and company had evaporated, when he was alone with the iron gates and the stone walls, and when the thought of the block, the ax and the saw-dust rose in his mind. During some time he regularly wrote a confession every forenoon when he was sober, and burned it every night when he was merry."

The effects of alcohol upon the mood is well known, and one of the greatest dangers connected therewith is the action upon the spirits. When a sense of misery is relieved by alcohol there is an underlying danger of excess in the future. The reaction after the stimulation leads to more and more being taken, "the further in the deeper." Half the Jacobite plots were hatched in carouses, for "when the wine's in the wit is out." This is seen in the expression, "the appeal from Philip drunk to Philip sober."

Good wine, good food, good company were much more esteemed in the past than now, when the conjunction is scarcely regarded as proper in the light of the present temperance movement.

There are some other relations of the vascular supply of the brain to the mental attitude, of which one of the most interesting is that of the effects of rapid growth.

When a child takes a "growing fit," and its blood is drawn away from its brain to its elongating bones, it becomes dull, stupid, and cannot learn its lessons; it is in an indolent mood. When the "growing fit" is over and the blood once more flows freely into the brain the child is lively, fond of its lessons, and can soon make up for lost time; it is in an energetic mood. This is a matter of which the School Board might do well to take a note. The child with its ill-fed brain cannot do its work any more than can the adult brain work when insufficiently fed. The plea of food for the school board children is just and well-founded.

Biehat observed that men with long necks and small chests were rarely men of great mental activity, and Schræder van der Kolk wrote: "It is a known fact that deformed, hunchbacked individuals, or where the blood flows quickly and strongly towards the brain, are remarkable for vivacity of spirits." This is slightly wandering from the track, but the expression "stout-hearted," tells of the link between the heart and brain in determining the persistence of a courageous mood.

The posterior lobes of the brain are the seat of subjective sensations, and are linked with the viscera by special nervous tracts. One day we feel well, and another day we feel not so well, even in health; and the same variation is found more marked in diseases. Our spirits, our moods, rise and fall according to certain visceral conditions. Any load in the large intestine produces distinct depression, and speaking of stimulants, Byron said, "Talk of champagne! for raising the spirits there is nothing like Epsom salts." And most persons of any experience are familiar with the cheerfulness of mind which commonly results from the action of a purgative.

We see then that our moods are not always by any means dependent upon outside influences, but are often the outcome of internal conditions of the system. Of course external influences are in action: good news

cheers us; glad tidings we call them. Bad news depresses us; evil reports make us gloomy. A story is told of a poor, brave officer, during a campaign in the Peninsula, being informed that a fortune had been left him. The next time he went into action he felt "nervous" for the first time in his life. There are no doubt psychical influences which affect moods, as all will admit. There are physical matters which affect our mental state, as many have observed, though the general acceptation of this fact has yet to come.

In normal digestion the well-assimilated products of our food pass into the blood, and the brain shares in the general nutrition, as is evidenced by a sense of cheerfulness. On the other hand, the dyspeptic is irritable, depressed, or ill-tempered, as can be seen in much of Carlyle's writing, where many a sentence is the expression of a stomach-ache. "The accursed hog dyspepsia had got me bitted and bridled, and was ever striving to make my living, waking day, a thing of ghastly nightmares," he wrote once in his agony. Every dyspeptic knows painfully well the debilitating effect of indigestion upon the energies. When an indigestible meal is exercising the stomach, the individual feels shorn of half his power. Indigestion is as enervating as a headache, and who does not remember what Oliver Wendell Holmes says in the "Professor at the Breakfast Table:"

"One in the clothing business let a customer slip through his fingers one day without fitting him with a new garment. 'Oh,' said he to a friend of mine, who was standing by, 'if it had not not been for that confounded headache of mine this morning, I'd have had a coat on that man, in spite of himself, before he left the store.'"

It is told that an indigestible meal once cost Napoleon a great battle. The Napoleons seem to have been unfortunate in this matter of the material substratum of moods; for an attack of gravel in the later Napoleon, is said to have precipitated him into declaring war upon Germany, in 1870, with such disastrous effects not only upon the Napoleonic dynasty, but upon France.

The linked association of mental states with bodily conditions is seen in the use of the word "humors." A person may be "full of humors" as a state of ill-health, or as in a perturbed, changeable mental condition. Still more marked are the relations of moods with the viscera and their functions, as seen in such expressions as "venting his spleen," or "pouring out gall," or "jaundiced view," and in the term, now rarely used, "white-livered," as indicating a lack of courage. As a more passing condition we use the term, "no stomach for a fight."

That the mental state is affected by the condition of the liver is a matter as well known to the world at large as it is to the world of medicine. Whenever the liver is out of order there is mental gloom. The expression used to describe this condition is "cholosmia," otherwise "bile charged blood." Materials are formed by the liver, when working abnormally, which act like toxic agents, depressing the nerve centers, lowering the energy of the heart, and saturating the brain till the whole mental horizon seems darkly painted in with Indian ink. For this state of sadness we use the term "melancholy," which, in the original Greek, means simply "black bile." When an old Greek was mentally depressed he was said to have "black bile." "Choler" and "choleric" also tell of the bad humor which obtains when abnormal liver products find their way into the blood and poison the brain, till the thoughts are "steeped in gell."

Another condition where instead of bile products the liver forms an excess of lithates, is called "lithosmia," or "gout" in its widest sense, A gouty man is usually "choleric," that is, irascible and hasty. Indeed, passing fits of distinct irritability where the person is "put out," out of all proportion to the exciting cause, contrasting

with the ordinary mood, is the most common feature of incipient gout, and often being antecedent to the joint symptoms about which all agree. With this state of temper there is also depression of spirits, and the famous Sydenham found that "a fit of the gout was a fit of low spirits." These conditions of the mind are truly toxic, *i. e.*, produced by a poison, just as much as is that condition of brain debility which results from resort to chloral. The only difference is that the one is a depressant poison produced within the body, the other a toxic agent taken by design from without.

Then there are external matters, not mental, which affect the moods. In speaking of localities we constantly speak of their being depressant and relaxing, or tonic and bracing. In damp, low-lying localities, especially when the temperature is high, the mind is lowered as well as the bodily tone; while other places are the opposite-high-lying and invigorating. Take Bath for instance. Up to a comparatively recent period the cultivation of the grape there was such, that "Bath wine" was a regular article of Bristol trade. The effect of Bath (at least those parts near the "bath") is enervating to most persons. Indeed, the tone of Bath is that of low spirits and religious thought. The warm, damp atmosphere, and the low barometric pressure, induce a mental attitude which has been described as "feeling delightfully lowspirited," and have caused Bath to be spoken of as "the religious watering place," and "the city of the sad." With this blending of temporal and spiritual states at Bath, we may contrast the bracing, tonic effects of Clifton, which is not so remarkable for its religious as for its intellectual activity. Bournemouth too has a distinctly religious tone about it, and it is a charming winter resort, at no great height above the sea level.

The normal brain, well supplied with blood, is invigorated by agents which "stimulate" it. There are not only alcoholic stimulants, but there are those of the vegetable world, of which tea, "the cup which cheers

but does not inebriate," is the type. Tea, coffee, cocoa, as well as coca, maté or Paraguayan tea, are all agents which act upon the brain, increasing the blood flow through it, and so raising its energies. The more potent agents of this group, as for instance, strychnia, constitute the nervine tonics so useful when the individual is "below par." When the brain is ill supplied with blood it works under difficulties; it accomplishes little, while it is oppressed by a sense of powerlessness. Cerebral anæmia, or brain-bloodlessness, is the material condition that underlies that mental condition of wretchedness which is relieved by stimulants, and this result is the fertile cause of much intemperance and secret drinking, especially among women.

When the condition is not too far advanced or too thoroughly established, the habit can often be broken. If the brain be well flooded with blood by the administration of other agents as nervine tonics, then the "craving" for alcohol is not experienced, and there exists no desire for drink. But when the bloodless state is not relieved, then this sense of wretchedness drives the sufferer to seek the relief afforded so readily by alcohol. The habit of drinking is not always vice; it is often the outcome of a bodily state, and then is the measure rather of bodily than moral depravity.

Such then are the moods of the sane, looked at from the stand-point of the physiologist, rather than that of the moralist or the theologian. If a man would live on good terms with himself, he must not only have a good conscience but he must also have an efficient liver. Mental gloom, religious doubt, a state of hopelessness, mundane or spiritual, are the outcome of bodily disturbances as often as' of what are called moral influences. The relations of mind and body are often strongly thrown up by disease. So hopeful is the consumptive usually to the last, that of old the term "spes phthisica," was in common use. While in cancer, there is a sullen resignation as the prominent mental attitude; and in

pyæmia the state of mind is commonly that of utter indifference.

The relation of visceral states to the mental condition is once more seen in the depression produced by disturbance within the abdomen as compared with thoracic maladies. Voltaire was ready to join the Englishman in suicide one day, but next morning his *lavement* had entirely transformed his views of life, and he declined to proceed with the compact between them.

Such, then, are some of "the moods of the sane" as linked with the body. The position of the modern physiologist approaches that of the old heathen philosophy, which held the axiom, *Mens sana in corpore sano*.

Neurological Photographs of More or Less Unique Cases Hastily Taken During the Active Practice of a Busy Neurologist.

By C. H. Hughes, M. D., St. Louis.

THE brevity of these records the pressure of a busy life must chiefly extenuate. Besides, good brother physician, you are busy as well as I. You have been wearied oft and been as often taxed to the limit of endurance—and a physician's endurance is great—by needless detail of non-essentials in case records. You will therefore know how, from past painful experience, to pardon the recorder's delinquency if he err in too great brevity and provokingly omit some details from these brief records which you would like to have. But they must be recorded thus only and now, else the opportunity is lost and other of those numerous matters that almost constantly claim a practicing physician's time, may crowd them out of mind and place in memory's record.

Unilateral epilepsia with consciousness.—We have here-tofore contended for consciousness as an occasional co-existent with the epileptic paroxysm and made record of some cases to prove the fact. (Vide ALIENIST AND NEUROLOGIST, Vol. II., No. 2, p. 236.)

Others have done likewise, notably C. W. Clark, same source, p. 400. Unconsciousneess is not an unvarying accompaniment of the epileptic paroxysm, though it is eminently proper to so regard it in the truest and most common types of *le grand mal*.

This is proven in those alternating and intercurrent states we so often see, and in some of the psychical equivalents of genuine epilepsia, which authors have compromisingly designated as epileptoid and epileptiform disease and in the conditions which have caused and which justify the distinction between epilepsia gravior and epilepsia mitior.

It is in the study of these latter states that the observant physician discovers, in detail, the real characteristics of genuine epilepsia and, making of them a mental aggregate, he sees more clearly and completely the real characteristics of the *grand ensemble* of symptoms as they exist, but are not so readily discernible in the cyclonic onslaught of the great common and typical form—le haut mal.

The present case record is that of a young man, aged nineteen years, of Hebrew birth, circumcised in infancy and precociously mature, who comes by advice of Dr. W——, his physician, but whose mother wishes him to go to "Kirkbride's," at Philadelphia, now under the medical management of the accomplished Dr. Chapin.

His father, who accompanies him, gives a history of persistent masturbation, some tobacco indulgence, late hours, former bright business capacity and industrious habits, but now of indolence, indifference and comparative stupidity. There is no history of previous serious illness or grave injury to head.

The boy's symptoms began to attract attention several months ago, but have become only grave enough to require medical counsel and care within the past six weeks. They are confined always and exclusively to the right side of the face, involving the obicularis muscles (palbebraram et oris), the zygomatici, the two levators (labii et nasi), and slightly the buccinator and masseter of the right side, so as to close the eye, close and retract the right angle of the mouth and wing of nose backwards, upwards and outwards, and cause a retraction, wrinkling and constriction of the cheek, with closure of mouth and jaw on that side, though he could in a manner open it on the other, there being no spasm of the muscles of the left side whatever.

The depressor anguli oris of the same side seemed also

implicated during the early part of the spasm, but its influence appeared to be overcome by retraction of the other muscles of the lower right side angle of the mouth. If the pupil dilates, or if the eyeball turns outwards or upwards, the fact cannot be discerned. The other pupil is not characteristically mobile during or after the attack, though both are habitually largely dilated. There is, at the time of the seizure, an unwonted slowness of mental action and some evident psychical inco-ordination, but consciousness is not lost or markedly impaired.

The boy carries suspended about his neck by a cord which reaches to his vest pocket, a small vial containing a sponge saturated with nitrite of amyl for abortive use and when the spasm seizes him, he removes the rubber cork and holds the cork in one hand while with the other he applies the open vial to his mouth or nostrils. He makes an intelligent effort and more or less successful one at inhaling the vial's contents, but does better when assisted.

The nitrite of amyl has a markedly abortive effect, when fully inhaled during a seizure, cutting it short quite effectually, as we see it often speedily terminate the more profound paroxysm in the grander phases of epilepsia.

Ether douches over the upper part of the upper frontal area of the cranium and gentle galvanic currents passed downwards (p. at top of head and left side and n. at back of neck, wet sponge electrode) seem also to have some effect in arresting the paroxysms.

The boy is a little tired and slightly drowsy and stupid for a few seconds after a seizure. Each recurrence of the paroxysm seems to make more impress on his mental powers and he has lost ground mentally every day since the first few paroxysms. These seizures amount to as many as seven or eight in twenty-four hours and the bromides, which modified them at first, do not now arrest them and a bromo-psychic hebitude set in a short time after beginning them, which necessitated their discontinuance. The paroxysms come at any time of day, but often begin on first waking early in the morning.

Arsenic, the hypophosphites, belladonna, digitalis and valerian, with constant cephalic galvanism, fifteen milliamperes three minutes daily, were our reliance, when the boy was taken from our care to one whom we hope may be more successful with him.

Eneurisis occurred without a single failure at least once every night, but generally oftener.

The boy's appetite was good and he partook plentifully of milk and malt and a varied unirritating, stimulating diet of eggs, meat, soup, oysters, game, fruits and vegetables, but chiefly Merck's Dry Malt Extract and milk.

The eyesight was sound and the urine free from albumen. It was not otherwise tested except as to specific gravity, which was not abnormal.

We tried our hand on this boy with less gratifying results than ever before in epileptoid trouble for ten days, and had not reached a solution of the trouble beyond the obviously conjectural one that the cause was in his own hands, when the distressed father paid his bill, bade us adieu and departed.

He has our thanks and the physician who sent him to us likewise for the opportunity given us of seeing another case of epileptic disease without the characteristic loss of consciousness. Should Dr. Chapin or any of our Eastern friends consent to retain this case for treatment, because of its neurological, rather than psychological interest, several of whom we have named to the father, encounter this interesting case, we hope they will contribute to make this record complete.

The usual tendency of epileptic irritation wherever it may begin, in either the motor or psychic areas of the cortex or elsewhere, is to diffuse itself from the starting point over the whole of one hemisphere at least and generally over both, and these cases in which the disturbance does not extend to the region of consciousness or even over the whole psycho-motor area, but stops within a circumscribed and limited space, teach the valuable and

instructive lesson that spasm of cortex origin is the essential symptomatic expression of epilepsia, whether we take the Jacskonian view that it is a discharging lesion or regard it simply as a morbidly stricken psycho-motor or psychical inhibition, as the writer considers it, and we must find some other criterion besides unconsciousness coupled with spasm for our diagnostic datum.

Perhaps we shall find it in a closer study of the peculiar characteristics of the spasm, a subject upon which we cannot now enter. The central irritation in this case appears to have been confined at each attack to the second and third frontal and the lower part of the ascending parietal and never to have gone further beyond the Rolandic fissure. There might have been some slight rotary motion of the eyeball, but we think not, nor did the head appear to rotate.

The extremities were unaffected, for the boy could walk during a paroxysm and use his arms and hands under volition, though he was not inclined to. He had no aura of smell or sight or taste, but announced the approach of of a paroxysm by saying, "It is coming." He had no appreciable augmentation of temper during the attacks.

Besides the above case we have now under treatment a boy aged twelve years, who has general hemi-epileptic convulsions as often as once a week when not restrained by treatment, the convulsion beginning in the face and extending to the upper extremities and thence to the lower limbs of one side only. The seizures come on frequently with an epigastric aura, followed by a suffocative sensation, but not generally by loss of consciousness, though unconsciousness has accompanied some of his seizures. He is the son of a member of the city fire department. His father has led a life of irregular activity and exposure, but temperate. His mother is extremely nervous and emotional.

A singular feature of this case has been the development of marked anasarca with the hebitude of bromide, which gradually disappeared on the withdrawal of the bromides and the substitution of digitalis, iron, quinine, calomel and squills.

The time has come when we must recast our stereotyped definition of epilepsia as a disease characterized by sudden unconsciousness, etc.

The epileptogenic zone is not confined to the psychomotor area, but epilepsia may start within it or be arrested within it or it may begin and end in the basal ganglia, But wherever it may begin or end, if the lesion causing it is wholly within the motor area, consciousness need not necessarily be involved, and its loss therefore need not be regarded as an essential symptomatic evidence of the existence of epileptic disease.

Distinctive Forms of Drunkenness.

By T. L. WRIGHT, M. D., Bellefontaine, Ohio.

PART I.—Spasmodic or Impulsive Drunkenness.

THERE is a limit to the nervous capacity of dealing with the intangible essences of mind and spirit. There is a point amongst the imperceptible agencies concerned in the operations of living, beyond which the legitimate authority of the nervous system cannot go. While the greater number of men possess an even and controllable sensibility of nerve, adapted to the conditions of a uniform and subordinate life, still there are many who are ruled by a nervous system so acute and oversensitive, that they are continually on the rack of uncertainty and discontent. Even in childhood the nerves are sometimes so impressible, that the slightest fever or local irritation is liable to produce convulsions. These little ones are exceedingly sensitive to pain. They are mentally acute, and morally conscientious; for the undue impressibility of their organism reveals much to their minds-more, indeed, than is really consonant with their years and physical powers. They are so excitable in their feelings, both physical and mental, that the very idea of corporal punishment throws them into paroxysms of dread and terror. The effect is, that such children often have not the fortitude to acknowledge any wrongdoing which will be likely to bring upon them bodily chastisement.

It is indeed dangerous to the future welfare of precocious children to lash them like dogs; and especially at the hands of a stranger—as of a school teacher. The shock to the nervous system is too great, and it is liable to inaugurate changes in nervous manifestations, which in

the end may prove to be exceedingly disastrous and pitiful. The public would not look on unmoved, while a teacher would undertake to correct the manners of a child, by administering to it some powerful and dangerous medicine for the nerves. Child-whipping is worse than medicine, when inflicted by persons both ignorant and raging.

As young people, with acute nervous constitutions, grow into maturity, even with the utmost care, they are in danger of being seized with one or another of the terrible maladies that may afflict the nervous system. These may appear in the development of hysteria, catalepsy, trance, neuralgia, epilepsy, or possibly, some of the grievous diseases of mind and morals.

Anyone who is affected with an excessively acute sensibility of nerve is always in trouble. Nor can he put it off, or smooth it over. The reason is, that his trouble is not from without, so that it may be recognized and guarded against, and its sources removed. It comes from within. It rises unexpected and unbidden. Should nothing real and tangible, as a mental pretext for worry and fret, present itself, something trivial will supply its place; and the trouble is ever present—for it is a habit of the mind that its movements must be associated with some exterior fact or fancy as a basis of action. nervous persons are always imagining slights-indignities, while the excess of feeling makes any apparent coolness to be keenly felt. The mind is penetrating to perceive, quick to assume, and wonderfully nice to discriminate. Should no immediate cause of uneasiness present itself, with a pertinacity that is truly harrowing, the mind will explore the unpleasant probabilities, and indeed, the remotest undesirable possibilities of the the future, that can be brought into relationship with the present; and it will fret and grieve over them. The sensitive man lives in the midst of woes that have no actual existence, and he wearies himself with perpetual preparations for averting calamities that never take place. And thus his life goes on. As one phantom of evil comes up and passes by, there is ever another one looming into sight, and distressing the imagination. To a man thus constituted living is a prolonged agony; there is no place where he can pause and rest.

It is true that the intensity of such a nervous system may be the means, at times, of perceiving things and their relationships, which are imperceptible to common minds. The highest achievements of literature, of eloquence, of grand ideas and their attendant noble deeds, fall to the lot of minds like these-those who feel keenly, write clearly and speak grandly. But the lowest depths of anxiety and despair are not unknown to these same bright minds. Sometimes the imagination is elevated into a sphere of grandeur, of nobility, and of the most exalted sublimity; anon it "falls like a falling star" into regions gloomy, melancholic, suicidal. minds are subject to moods and periodicities, but the acutely sensitive mind is peculiarly subject to them. To a mental and physical organism thus tried and tossed upon the ocean of time, how alluring, how pleasing, how welcome is a haven of rest!

Sometimes by mere chance, and again, perhaps, with a purpose, the alcoholic cup finds its way to the lips of the man with unstable and quivering nerve. Instantly the exalted sensibilities of the nervous system are allayed. Forebodings cease to disquiet, and a pleasing sense of repose tranquilizes the body and comforts the spirits. The paralyzing influence of alcohol relieves the grievous worry of the whole being. A first experience of this kind is like a pleasing revelation. The mind revels in bright imaginings without a single pang of distress. The galling sense of responsibility and the dread of impending but undefined evils are removed. effort is easy and agreeable. Happy thoughts and grand ideas throng upon the imagination in endless succession, and everything appears true and beautiful. It is not strange, when alcohol produces such effects as these,

upon a mind naturally given up to trouble and unrest, that a resort should be had to its soothing influences, not only with frequency, but with determination. And if this were all, alcohol would seem to be a friend indeed.

It is apparent that the motives of the casual drinker in partaking of alcoholic liquor, and those of the impulsive inebriate, are wholly different. In the former they are feeble, almost to indifference—not driving, or strongly impressive. They may be, it is true, associated with some projected but temporary effort of body or intellect, but these are things that after all relate to affairs outside of self. The incentives to drink in the occasional inebriate, may be readily measured and calculated, and they can easily be overcome. But the motives of the spasmodic drinker are bound up in his constitutional nature. They exist within his organism. They are not the subjects of calm deliberation and of free and easy choice. While they may possibly be at times of a minor degree of urgency, and really controllable by the will, they are never easily overcome—never readily submissive to the guidance of the judgment. They are the offspring of feelings that are strained and importunate, and are therefore of the nature of impulse rather than of rational intent.

Whether the motives of the spasmodic drinker are at any time so strongly controlled by the acuteness of the sensibilities that they cannot be influenced by reason and will—whether, in fact, the impulse to alcoholic indulgence is ever truly irresistible, is a question in discussion amongst observers. That the impulse is much stronger in some spasmodic drinkers than in others, is certainly true; and it would seem to be not improbable that a point may be reached, in the extremity of nervous distress, where the mind is unable to overcome the urgency of its desire for relief. This point, however, looks very much like a condition of insanity.

It will be observed that while the real object of

the occasional drinker is to secure the supposed improvement of some special quality of body or mind, the object of the periodical drunkard is to obtain restrepose of mind and body. He seeks, in fact, the paralysis of alcohol to quiet the perturbation of a sleepless nerve activity. Therefore he drinks for the sake of drunkenness--for the sake of whatever there is in it that will act as a sedative to his nervous irritability. It has been said that inebriety is a crave of overwhelming power for intoxication, not intoxicating liquors. It will be observed that this definition of inebriety, given by Dr. Parrish, and Dr. Kerr also, applies only to the intent of the spasmodic drinker, and not to the motives of the casual inebriate. It would appear that this definition should be applied to that form of inebriety known as dipsomania, and should be restricted to it; for the dipsomaniac is the true impulsive drinker, and no other can be so classified.

It has been denied that there is any such thing as a constitutional taste, or even proclivity, for alcoholic drinks-a taste impressed upon the very nature of man himself. Indeed, it has been denied that there is a constitutional habit of any kind-that is, a habit implanted by nature in the human being. It is absurd to speak of a habit being transmitted through heredity, as though it were meant that children did the very acts, or experienced the identical feelings of a parent. But to suppose that certain nervous states, conditions, relations, perfections and imperfections, which, in the father, impelled to certain customary acts, may practically reappear in posterity, through heredity, is reasonable; and of course these customary acts, arising from the nervous states of the ancestor, will be repeated by that posterity inheriting such nervous states and conditions. In other words, the conditions of certain habits may be transmitted, and through them the habits themselves may reappear.

With respect to alcoholic liquors, the denial of

transmitted habit is, in a certain sense, correct. Alcohol, when considerably concentrated, as in the more potent liquors, is usually disagreeable to the taste. It is apt to be swallowed in large quantities, and rapidly, solely for its effects upon the system at large, and the mouth and throat are then quickly flooded with water. There may be, therefore, some peculiar condition within the system which is so undesirable and painful, that anything which will change it for the better will be seized upon and used with avidity. Alcohol meets the wishes of the impulsive drinker mainly through its quieting influence upon an agitated system of nerves. This is really not so much an appetite for alcohol, as it is an indication of a great and consuming nerve distress, recklessly importunate for relief.

It is true that certain traits and conditions of body and nerve are transmitted, in some degree, from ancestry to posterity. The conditions of nervous constitutions which find relief in alcohol may, through heredity, become the conditions of a similar constitution in posterity. The conclusion is, that whatever affords rest to nerve instability in the progenitor, will also afford relief to a like nervous condition in his offspring. In this sense, the alcoholic appetite may be called hereditary. But, it must be remembered that this so-called hereditary appetite is in no way modified whenever it happens to be founded originally upon causes that are not alcoholic. The disposition to alcoholic indulgence is just the same in posterity when the ancestral defect of constitution comes from sunstroke, physical injury or profound disease, as it is when the defect arises from alcoholism itself. Yet, as alcoholic indulgence is a potent factor in producing both functional and structural degeneration in the nervous constitution, it seems, that to say the alcoholic proclivity is inheritable, is not wholly wrong. That the status of nervous energy—the data of nervous manifestations are often derived from ancestry, not only in the matter of impulsive drunkenness, but in many other particulars, must be apparent to honest and capable observation.

Any very slight singularity of position or arrangement among the cells of the brain, is probably conducive to the formation of singular habits. A gentleman, when in the days of his childhood, had an inveterate habit of chewing his finger-nails, and it was only after he was compelled to use his hands in employments that were incompatible with this bad habit, that he could relinquish it. A considerable number of his posterity have the same habit up to eight or ten years of age, and it seems impossible to break them of it by any effort of their own.

There is a peculiarity about the drinking disposition of the impulsive inebriate. His potations are only limited by the bounds of physical endurance. Alcibiades, amongst the ancients, was a spasmodic inebriate. His impetuous and impulsive act in throwing himself before the wheels of a moving wagon, while he was yet a youth, in order to secure a trifling demand, was only of a piece with the long train of desperate and impulsive movements which characterized much of his life, both drunken and sober. It is a common threat of a certain spasmodic drinker, that he will cast himself beneath the wheels of a moving locomotive in case he is checked in some unreasonable conduct. It is by no means sure that, in a spirit of drunken and insane bravado, he would not carry out his threat.

The obstacles imposed by the paralysis of alcohol upon the right exercise of both the intellectual and moral faculties, are really surprising. Mr. G. R—— was traveling on horseback in the winter time. He had a bottle of whiskey with him, and had become very drunk. A boy on the road had jeered at him, and told him to "straighten up," referring to his swaying movements on the saddle. R—— drew a revolver, and remarking to the boy: "I guess you have lived long enough," fired two shots purposely wide of the mark, to scare him.

Of course the boy got out of the way as soon as possible. R- says that "chawing over what the boy said, he began afterwards to get mad." Just then he espied two men approaching in a sleigh. He made up his mind that if they drove within a certain distance of his side of the road, "he would give them a crack any way." They drove within the limits he had set down as forbidden, all unconscious of danger, when he snapped his pistol twice in their faces. Happily it did not explode, although it did explode in the hands of another person shortly afterwards. On the next day Rremembered distinctly of firing twice to scare the boy, but at first, he had no recollection of the sleigh episode; but when the circumstances were related to him, the suggestion brought the whole transaction, together with his own thoughts and impulses, plainly to his memory.

This was not a case of "trance." Consciousness was half buried in the slough of drunkenness. Liquor had rendered both mind and morals torpid. The operations of reason and judgment were hampered by defect in instrumentalities, and the moral sensibilities were deadened by paralysis. The ordinary characteristic of R——is that of much kindness, and a disposition to assist those in need of help.

The impulsive inebriate drinks for the effects of alcohol—for intoxication. The disabling effects of liquor are more immediately pronounced on him, as a rule, than on other drinkers, for he partakes of the strongest drinks. He cares nothing for wine or beer, if he can procure whiskey, brandy, gin or rum. The conditions which, taken together, constitute drunkenness, are the conditions that he seeks to establish in his own person. He desires to divert his attention and his feelings into new and pleasant ways. He wishes to think easily, and without the ever attendant pressure of care and responsibility; above all he seeks a welcome rest and repose of nerve.

The spasmodic drinker is infatuated with the agreeable experiences of intoxication, and in his wild efforts to obtain the full fruition of the alcoholic influence, he becomes speedily and profoundly drunken. He drinks himself into insensibility before he is aware of it, only to awaken and again drink himself into unconsciousness. This proceeding he repeats for days together, until the stomach, inflamed and abused by the burning and poisonous qualities of alcohol, refuses to retain anything whatever.

Before noticing the unexpected and undesirable effects and contingencies of drunkenness—especially as they are displayed in the periodical inebriate, it will aid in their comprehension, to inquire: Who is the dipsomaniac, and what are his natural associations and relationships?

In answering these questions the testimony of authorities that are unimpeachable will be relied on exclusively.

The distinguished writer and thinker, Dr. Louis D. Mason, states the proposition: "Alcoholism in progenitors will produce physical and mental degeneration in their descendants, such as epilepsy, chorea, paralysis, imbecility, insanity and idiocy; and the laws which regulate these degenerative changes, are similar to those that govern degenerative changes from other inherited causes."

It is to these laws, governing the degenerative processes, that attention is solicited. From them the inference will be that dipsomania—spasmodic drunkenness—is a member of the family of insane neuroses. That is, dipsomania is one of the characteristic freaks of insanity, just as epilepsy, chorea, some forms of neuralgia and imbecility are members of one and the same insane family connection. It will be observed that the insane neuroses are classified together by the best authorities, and that dipsomania is named as one of them.

Dr. Blandford says: "The particular character of mania or melancholia depends upon the character of the individual. A person may at one time be melancholic,

and at another maniacal. But the same form [of insane demonstration] may frequently be seen in successive generations, as suicidal mania and hereditary drunkenness."

The same author states: "Amongst the lower class of our countrymen insanity is on the increase;" and he accounts for the fact by saying, "the amount of drunkenness is enormous, and is almost confined to the lower orders."

Dr. Dan'l Hack Tuke inquires: "When mental disease is transmitted, does the same form of insanity descend? Very frequently this appears to be the case. Of dipsomania the cases are so common that it is not necessary to detail any examples."

Dr. Bucknill says that, "inquiring into the habits of a patient will often discover cause for the production of insanity. Habits of intemperance, for instance, and habits of strong mental excitement." Habits of strong mental excitement are probably the indices of existing mental defect, rather than the causes establishing it de novo. Impulsive drinkers are persons of quick and violent tempers, whether drinking or not. It is a fact, however, that the nervous wretchedness which seeks relief in alcohol, is apt to be attended by exhibitions of an ugly temper. During the early stages of drunkenness the disposition is often improved, and at that particular time the inebriate is generous and agreeable. Still it is true in the main, that an outrageous temper is a common trait in the character of the impulsive inebriate.

A gentleman was for years a furious periodic drinker. He drank often and deeply of ardent spirits. Finally he broke away from this habit. Yet he is subject to spells of ungovernable rage. Sometimes the cause is very insignificant, at others it may be more serious. But the violence of the temper is the same in either case. Instantly, almost like an explosion, he finds himself in a fury of passion. When in this state he thinks of killing, wounding, and every species of frenzied violence, without

compunction or consideration. After the spell is over he wonders at his anger and at his thoughts, and (vainly) resolves to guard his feelings in the future. His impulse appears to be similar to that of the drunkard who tried to shoot the men in the sleigh. It is an impulse which drives directly to the catastrophe, without the power of considering means and consequences. The gentleman described carefully avoids carrying deadly weapons, and he keeps all such things out of convenient reach.

Dr. Bucknill, in another place, declares: "Strong drink does often cause disease of the nervous system with disturbance of the mental functions; and such diseases, coming from other sources, give rise to the passion for drink. The history of such cases, their *heredity* and periodicity, are well known to those who have made madness their study."

Dr. Wynter says: "Among the more special forms of moral perversity, or, as the alienist would say, insanity, which are transmissible by an insane parent, may be mentioned dipsomania."

"Not one of the transmitted wrongs," says Dr. B. W. Richardson, "is more certainly passed on to those yet unborn, than the wrongs which are inflicted by alcohol."

A young man of adult age, of fair size and weight, daily passes along the street, impressing all who see him, but who do not know him, with the idea that he is greatly intoxicated. He moves his limbs in a loose and unsteady manner, throwing his toes outward as though to insure bodily support. He walks flat upon the soles of his feet, without any sign of elasticity in stepping. The arms and hands are incessantly revolving outward from his body in an effort to preserve the general equilibrium. The eyes are rolling, and the head moves unsteadily, being feebly supported on the spinal column. The articulation of speech is extremely indistinct and panting, while the voice is coarse, rough and dry. He is probably weak in intellect, but is not

imbecile; he can be trusted alone. His father was a drunkard while the young man himself is a total abstainer.

Dr. Maudsley declares that, "Drunkenness in parents, especially dipsomania, which breaks out in uncontrollable paroxysms, is a cause of idiocy, suicide and insanity in offspring."

Dr. Parrish remarks: "Some persons are born with an alcoholic diathesis, * * * It is the *internal craving* for liquors for their intoxicating effect, that constitutes the disease, and not the fact of drunkenness."

This distinction is a sound one. The disease is inward, the symptom, the habit, the drunkenness, is external. And drunkenness, the crave for intoxication materialized, is a symptom of more than one pathological state.

The habit of drunkenness is believed by many to feed upon itself; to become intrinsically stronger and more unmanageable by repetition; just as a muscle is increased in size and power by exercise. But impulsive drunkenness should be viewed as incapable of existing by virtue of its own unaided force. It is rather a symptom or indication of something else, something contained within the human constitution; and, if such is the fact, that something must be possessed of qualities very strong and very undesirable. What that inward morbid force is, has been partially indicated. Its relations with insanity and with the several subordinate phases of the insane constitution, have also been traced. It is impossible that subsequent cravings for intoxication should be stronger, more urgent than the primary craves were.

Yet it is true that, in the periodic drinker, the intervals between the sprees become gradually shorter, and the sprees themselves last longer as time goes on. Why should these things be if the appetite is not stronger? The fact is, the original trouble causing the alcoholic crave, is no longer operating alone. While it remains the same, there are associated with it new complications, which also demand the alcoholic excitement. The increasing demand for alcohol is, therefore, indicative of additional

morbid changes in the constitution, not of additional strength in the original appetite.

The truth is, that the reckless and desperate manner of drinking, favors the production of physical changes in the bodily structure; and these, being degenerative, instinctively require a more frequent resort to alcoholic influences in order to keep up temporarily, the failing powers of important organs. It is in consequence of such facts as these, and of certain functional disabilities following their establishment, that the casual drinker may be transformed into the habitual drinker; and the periodical inebriate is almost sure to undergo a similar transformation.

It has been said that the impulse to drink is more urgent in some persons than in others. In opinions respecting responsibility for crime, this should be taken into consideration. The strength of the impulse may be measured not only by the facts in issue, but more particularly by the history of the besetment, as, whether ancestry were truly insane, and the like. This will also measure the resisting capacity, a very important matter in the question. For it is impossible to conceive that a man is truly sane who is beset with a proclivity that his judgment and will cannot control. But it is equally difficult to conceive of a mind that is incapable of controlling some particular appetite, and yet is fully able to control all other appetites and feelings. The truth is. that it is not the strength of the desire that is alone to be considered, but also the strength or imbecility of the will.

The fact that automatism interferes with a correct judgment respecting dipsomania, should not be forgotten. There are other important points that sometimes come into view in the progress of dipsomaniacal drunkenness. While these points are not always present, they are possible, and indeed they frequently appear. They relate to the untoward, and unexpected and undesired impressions of alcohol upon the body and mind.

PART II.—Spasmodic or Impulsive Drunkenness.—
Complications.

The complications of drunkenness, and especially of convulsive inebriety, are many and important. They are often of a nature to fasten still stronger the habit of intoxication upon the inebriate; and they also, not infrequently, modify drunken impulse and determine drunken conduct. They should, therefore, be taken into account when estimating the character of the drunkard, and of his acts. Complications may appear in every step towards inebriety, as well as throughout its whole course. They may be seen in the causes of spasmodic drunkenness, in its progress, and in its consequences. Many of them are unexpected as well as undesired, and the causes of not a few are, no doubt, even now unknown. The effects are apparent, but the actual and substantial reasons of them are, as yet, subjects of inquiry.

The hereditary causes and associations of dipsomania have been briefly noticed. Yet it is true that some of the consequences of drunkenness may, in the course of the disease, be set up as being themselves causes for the continuation of intemperate habits, either directly or contributory. The very great violence of that drunkenness which owes its origin to an irritable nervous constitution, tends, as might be expected, to the production of physical injury to some of the more sensitive and vital organs of the human body.

There appears to be a clearly marked line of distinction between a *stimulant* and an *excitant*. To the former may be attached the idea of more or less prolonged, yet in fact, temporary increase in the vital powers, without any considerable subsequent bodily depression. Such stimulants are, for example, carbonate of ammonia, capsicum, certain stomach bitters, etc. With the latter may be associated the idea of immediate and great increase of function, with a very considerable subsequent depression of the organs affected. Such an excitant, thus operating, is alcohol.

Stimulants are usually regular and safe in their opertions, while excitants are, to some extent, unmanageable and dangerous, unless, indeed, they are employed as medicines in sudden and great emergencies. But, be this distinction right or wrong, it is at all events a fact, that alcohol acts quickly and strongly as a heart excitant. This it must do in its character as a poison, for its specific action is after all that of a general paralyzer. It violently augments the rapidity and seeming strength of the heart's action. The latter quality, however (strength), is delusive, as the real force of the heart-beat is much less in fact than in appearance; it is easily depressed. When the alcoholic excitement subsides, this augmented action not only abates completely, but the natural powers of the heart go down to a degree of weakness that fully corresponds with the height of their previous excitement. In the spasmodic drinker then, it is to be feared that, sooner or later, the heart will become seriously disabled; and not functionally only, but structurally also.

In a little town of four thousand inhabitants, the following spasmodic inebriates have consulted a single physician for heart disease. The symptoms complained of are "fluttering" of the heart, with dizziness, and a dread of impending death:

R. H— is an old soldier. This man applied for a pension for heart disease. He became much concerned about his heart, and *joined Church* and quit drinking. As his heart troubles are really alarming, the probabilities are that the man will be able to keep his resolutions and promises. He has been for twenty years a violent and unmanageable drunkard.

There is no doubt that the quieting influences of true religious convictions, have much to do in calming the painful irritability of nerve, which often impels to drunkenness. This impression upon the nervous system is aided, also, by the absorption of the mental and moral powers in the duties of a new life—one so different from

that of the inebriate. Aside from all considerations of a religious nature (for truly an Omnipotent Power rules all things, small and great), it should not be forgotten that this effect is, in its purely human sense, simply in accordance with physiological and therapeutical laws; and is not, except by indirection, the outcome of any miraculous interposition. The theory in such cases is, that one nervous tendency is supplanted by another and a stronger one. It is in effect a transmutation of nervous forms—a transmutation always effected when the nervous conditions of one form become the stronger, and over-ride the conditions of some other form.

Another impulsive inebriate, S. S—, fearing death from heart trouble, measurably ceased drinking for two years. He thought drinking helped his distress, but the sinfulness of the act deterred him, as he expected to die at any moment. He died from heart disease, being confined to his bed for a few days only.

I. N—, an impulsive drinker for twenty-five years, draws a pension for heart disease. He still drinks to relieve his feelings. This man has a feeling "as though his breath was all going out of him." The expiration of his breath does not seem to stop when it should, in order to easily begin the act of inspiration. He complains that he has to watch, and begin to "draw in his breath" by an act of conscious will. These spells are occasional, and are attended by "fluttering" of the heart.

W. A—— has become frightened by grave heart symptoms. His case has been explained to him. He is taking treatment, and is trying to abstain from liquor.

C—, a physician, drank strong liquors, and in large quantities, for a series of years. He gradually became nearly helpless from heart trouble. He dropped dead recently, immediately after partaking of a glass of spirits to relieve his distressful sensations. Whether this case came originally from liquor drinking is not known.

H. L—— complains bitterly of irregular heart action, sometimes keeping his bed for days together. But he

takes alcohol much of the time as a "medicine," self-prescribed, of course.

B. U— was a desperate periodic drinker for fifteen years. He suddenly quit the habit of drinking during a temperance excitement. There does not appear to be any perceptible transmutation of nervous form in his case, unless it is through the substitution of periodical neuralgia of the head—megrim.

Dipsomania, in the first place, may be said to be an instinctive effort to change a painful, but indefinite and chaotic nervous state, into a nervous state (intoxication) of definite form. The constitutional changes of life often eliminate propensities and tastes; so that, a habit being destroyed, it is found that the original condition it represents has also disappeared, and the case is "cured," or, perhaps, "reformed."

U— has considerable trouble with his liver, and he has also heart disease. He is broken down in health, and is taking medical treatment much of his time. He thinks his heart troubles are gradually abating.

There are, doubtless, other cases of heart irregularities, from impulsive drinking, in the same community, but those named are conspicuous and well known.

Dr. B. W. Richardson says: "In the inebriate, the heart is never allowed to declare itself naturally. At first the heart is made tense and full by alcohol. This, under continuance, extends to permanent enlargement, dilatations, and stretching of the valves; and distension of the arterial system throughout, leading to loss of elasticity. With the circulation so modified—the heart is so feeble, the arteries so imperfect—there could be nothing but uncertainty of physical and of mental manifestations."

Of course, such a state of the circulation, at one time strained and over-wrought, at another, feeble and creeping, but with a heart-beat always rapid, favors the advent of melancholy moods, leading to despondency and suicide. And a very little reflection will convince one that there is nothing extraordinary in this. That the heart is very liable to become dilated, and its walls weakened in the strong inebriate, is evident; for, as a stated thing, its pulsations increase in frequency from seventy per minute, to eighty-five, or even more. The latter figure represents an extra and unnatural labor forced upon the heart, of nearly eight millions of beats in a year—a change of heart-beat from thirty-six millions to forty-four millions, in round numbers, per annum.

Injury to the heart and blood-vessels is one of the complications liable to appear in the progress of long-continued inebriety; and yet it becomes one of the contributory causes, leading to further intoxication. Whatever may have been the force of the predisposition for drink previously, heart disease will, most likely, augment and confirm it. The arterial circulation is not held in its natural force and activity, because the structure of the heart is impaired and its force enfeebled. The column of blood that reaches from the heart to the brain is not sustained in its proper volume and steadiness. Consequently there is additional discomfort and discontent of nerve, to say nothing of instability of mental and moral movement. The inebriate does not know why this is so. He is ignorant of facts and reasons, but he knows that there is, somewhere in his nature, a great want; and he knows from experience that alcohol will, for a short time, quiet his uneasiness; and he fails not, too often, toavail himself of its help.

"Inebriates tell the physician nothing more than the fact that they know and feel the *sustaining* power of alcohol. They affirm that they cannot live without it, and every statement to the contrary only confirms them in the belief of the ignorance, or the unfeeling nature of their adviser."

These facts suggest the idea that heart disease may itself become a prominent cause in the formation of the alcoholic habit. If a heart, weakened by alcoholic indulgence calls for the exciting influence of strong drink, may not a heart weakened and powerless by natural.

causes, as from heredity, also find help and strength in the operation of the same agent?

A gentleman, whose grandfather, a man of good habits, died suddenly with heart disease, inherited the infirmity, and suffered much from heart troubles. He remembers that, when yet a child, any excitement, such as anger, dread of punishment, and the like, caused a dreadful and unaccountable choking in his throat and chest. This was so great, that it often wholly disabled him for the time being. In after years he became an impulsive drunkard; that is, he drank for a long time, and he drank hard. Of course the remedy increased the disease; so that it became necessary not only to abandon drink, but also to abstain from all kinds of business for several years. It is not probable that the disposition to drink strong liquor was, in this case, altogether a coincidence. The depressed feelings found a certain amount of relief in the alcoholic habit, and it was persevered in for a considerable period of time. A grandchild of this gentleman was born with such an imperfect heart, that it was several weeks before he could be left alone, lest he might sink away and die. The child, now several years old, is much better, but he has yet, and always will have, an imperfect heart.

There is no disposition to indulge in frivolous and impracticable refinement, yet the point is suggested, and it is at least worth stating, namely: If hereditary weakness (and even structural imperfection) of the heart, induces so feeble and unsteady a constitution as to tempt strongly to alcoholic indulgence, may not certain habits that depress heart power, also become active causes in producing a desire for intoxication? It seems to be probable indeed, that the excessive use of tobacco by persons of weakly constitutions, and especially the habit of using cigarettes by children and women, would, materially weaken the pulse, and thus lure to intoxication.

The tobacco habit can scarcely rank in dignity with

the nervous conditions which are really interchangeable with each other, and which are related to insanity. It is not easy to break off the use of tobacco, because there is no substitute for it amongst the several morbid nervous forms; for it is probably true, that a large percentage of the so-called cures of nervous affections, are simply transmutations of diseased forms, from something obvious and offensive, to something else with less conspicuous symptoms. Dipsomania itself is, no doubt, often "cured" in this way.

(To be Continued.)

Acute Transverse Myelitis, with Perforating Necrosis of the whole Dorsal Cord, Ascending and Descending Degeneration.

By Chas. L. Dana, A. M., M. D., New York.

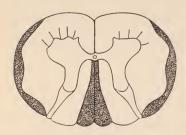
Professor of Nervous Diseases, New York Post-Graduate Medical School.

THE patient was a woman aged 30, a domestic, who gave no specific history and had been in fair health up to the time of her illness. In May she was suddenly attacked with paraplegia and was brought to Bellevue Hospital, where she developed speedily all the symptoms of a transverse myelitis in the upper dorsal region. The symptoms began so suddenly as to lead to the suspicion of a hemorrhage, and this doubtless was present at first.

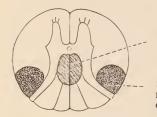
The disease caused total motor and sensory paralysis below the level of the lower part of the thorax. The sphincters were involved. The limbs showed exaggerated reflexes and little atrophy. After four weeks high fever with severe sweats appeared and lasted almost continuously until her death four months after the disease began. The details of the history are like those of ordinary acute myelitis, plus a very high and continuous fever.

At the autopsy, the spinal cord alone showed any important changes. There was considerable chronic pachymeningitis in the dorsal and lower cervical region, but no suppuration process. The cord in its upper dorsal segments was reduced to a fibrous band by the myelitis, all normal tissue being destroyed. Above and below were ascending and descending degenerations respectively. The ascending degeneration was in the column of Goll, direct cerebellar tract and a part anterior corresponding somewhat to the antero-lateral ascending tract of Gowers.

Mid-Cervical.



Upper Dorsal.



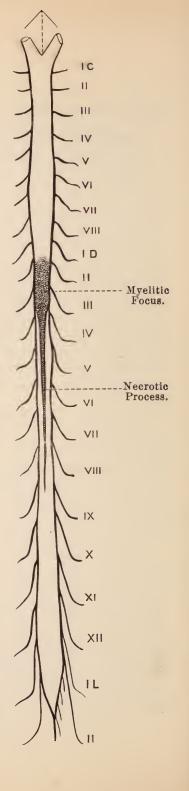
Necrosis.

SecondaryDegeneration.

Upper Lumbar.



Transverse Myelitis, with Hemorrhagic Onset, followed by Perforating Necrosis of Posterior Column of the whole Dorsal Cord.



The descending degeneration was in the lateral motor tracts as usual.

The deep part of the posterior column, just behind the posterior commissure was occupied throughout the dorsal cord by a sharply limited white mass. This mass looked like pus; just below the myelitic focus it occupied nearly all the deep half of the posterior column. Lower down it gradually became smaller and ended at about the beginning of the lumbar cord.

Microscopical examination showed that it was composed of granular and fatty matter, but no pus. Neither were the walls limited by a pyogenic or other distinct membrane. There was no inflammatory change whatever. It was a necrotic process, not affecting the gray matter or central canal, and not corresponding to the distribution of any blood-vessel. It was caused probably by some destroying poison or infection creeping from the inflammatory focus through the cord.

Tests for bacilli tuberculosis kindly made for me at the Carnegie Laboratory by Dr. H. M. Biggs showed that it was not tubercular.

The case is a unique one and I offer it as a contribution to the pathological anatomy of acute myelitis.

SELECTIONS.

CLINICAL NEUROLOGY.

REMARKS ON CERTAIN VASO-MOTOR NEUROSES. (Delivered in Connection with the Edinburgh Post-Graduate Lectures for 1888.)—By G. A. Gibson, M. D., D. Sc., F. R. S. E.

In the following remarks it is my purpose to direct your attention to an interesting series of symptoms which have their origin in alterations of the functions of the vaso-motor system, and which, taken together, form an exceedingly definite group of phenomena. The clinical aspect of the facts to be laid before you will receive the largest share of our notice; it will, nevertheless, be necessary to recall at times certain points in regard to the physiological considerations involved in a study of this nature. It will, moreover, tend to a clear understanding of the subject in all its relations, if a brief glance be cast, in the first place, upon the normal functions of the vaso-motor system, before we attempt to form any opinions in regard to the changes which they undergo in disease.

The vaso-motor system consists of centers brought: into relationship with the vessels by means of the vasomotor nerves. Many different parts of the spinal cord contain vaso-motor centers, but they appear to be under the influence of one dominating center for each lateral half of the body. The position of this center in the rabbit is in the floor of the fourth ventricle, about two or three millimetres from the middle line, reaching from about one or two millimetres below the corpora quadrigemina to four or five above the calamus scriptorius. In this position it is, as you may readily imagine, in very close connection with a number of other important centers. It is intimately associated, for example, with the inhibitory and accelerating centers for the heart; with the different parts of the respiratory center, as well as the allied centers for coughing and sneezing; with the centers for the reflex actions of the lips, mouth, pharynx, and salivary glands; with the vomiting center; with center controlling the sudoriparous glands

lastly, with the upper center for the dilatation of the iris, and also that controlling the movements of the eyelids. The proximity of these various centers, and their intimate relations, render it quite easy to understand why poisons which act upon the medulla cause such varied effects, and why certain diseases, which directly or indirectly affect this region, produce symptoms so wide-spread and far-reaching.

Under ordinary circumstances, the vaso-motor centers appear to be in a condition of medium tonic irritability; stimulation, whether immediate or reflex, induces contraction of all the arterioles, with an increase of blood pressure, while depression, either direct or indirect, causes dilatation of these vessels throughout the body, with a

diminution of the arterial pressure.

Amongst influences which directly affect the vaso-motor centers must be mentioned, in the first place, the condition of the blood in regard to its contained gases. When blood circulating in these centers has a free supply of oxygen, they remain in a state of moderate irritability, and the arterioles are dilated; but if, on the contrary, the oxygen is deficient, the irritability increases, and the vessels are thrown into a condition of contraction. As a familiar illustration of this fact, it may not be out of place to recall the well-known circumstance that the empty condition of the arteries after death is the result of the venosity of the blood, which has caused such a contraction.

The only other agents directly affecting the centers to which reference need be made in this place, are drugs, and of these no more requires to be said at present than the fact, that strychnine may be regarded as the type of those substances which excite the centers and produce a rise of arterial tension through contraction of the arterioles, while amyl nitrite may be taken as a good example

of the opposite group.

Indirect agents causing changes in the irritability of the centers produce their effects reflexly, by means of two sets of afferent nerves. There are, firstly, pressor nerves, which give rise to a contraction of vessels and a rise of blood pressure through increase of central activity. These nerves are brought into play by fall of external temperature, for instance, and many other causes. There are, secondly, depressor nerves effecting opposite results by means of diminished central activity. These are excited

by heat externally, to mention a familiar example, as well

as by other circumstances.

It seems highly probable that in addition to the vasomotor, or, as they might be called, vaso-constrictor centers, there are vaso-dilator centers with special nerves. This question, however, cannot be regarded as sufficiently definite to afford a basis for the explanation of clinical phenomena, yet it appears to be far from improbable that many conditions characterized by vascular dilatation may have their origin rather in excitement of such vaso-dilator. than in depression of the vaso-constrictor centers.

Before leaving these preliminary considerations, let us once more refer to the close proximity of the medullary centers. The fact of their being in this direct contact gives an easy explanation to many associated symptoms, such as we are about to consider; for, as may readily be understood, if a powerful degree of excitement is induced in one center, it tends to spread into neighboring areas of nervous activity. Perhaps the most familiar example of this fact is to be found in the common circumstance. to speak of other centers in passing, that in diseases attended by prolonged coughing, there is a great tendency to the production of vomiting towards the end of the fit of coughing.

Turning now from such preliminary considerations to the subjects which are more particularly to occupy our attention, let me, in the first place, bring under your notice some clinical phenomena depending upon an increase in the irritability of the vaso-motor centers. is well known that at the outset of acute diseases there is usually profound excitement of these centers, manifested by such general symptoms as pallor of the surface, caused by contraction of the vessels, and associated with a sensation of cold attended by shivering. It is quite outside the sphere of this lecture to dwell upon such vaso-motor changes as we find in fevers and inflammations, but it will certainly make my aim clearer if you will allow me to make such passing references as this.

Among phenomena caused by excessive action of the vaso-motor centers we may glance at certain effects produced upon the skin. In patients of neurotic tendencies it is extremely common to find patches of pallor upon the surface contrasting strongly with the healthy skin, and very frequently such patches occur in areas which are deeply flushed. On the forehead, cheeks and neck, there may be pale and flushed patches mutually bounding each other and sharply defined. When such is the case, other nervous phenomena are present in addition to the contraction and dilatation of the vessels. Of such attendant symptoms, perhaps the most common are dilatation of the pupils and palpitation of the heart, telling the tale of medullary excitement. Cases have not infrequently come under my notice in which a carious tooth or an astigmatic eye has produced long-continued phenomena of such a kind.

One of the most frequent, as well as most striking, results of vascular constriction from vaso-motor excitement is to be seen in hemicrania or migraine. This condition, in the fully developed form or in lesser degrees, frequently follows some affection connected with the eye, or ear, or mouth, and speaks of irritation of the sympathetic nerve produced reflexly through the medulla, and shown by several associated symptoms. There is the severe pain caused by deficient nutrition of the nerves from vascular constriction, and pallor of the surface due to the same condition, while the dilated pupil is evidence of excitement of the medullary center for the movements of the iris, and the emesis which follows is proof of irritation of the vomiting center. But it must not be forgotten that hemicrania may be the result of other changes than those just referred to, and the cause of the affection can only be arrived at by careful study of the various symptoms present. Most of the cases of migraine, however, which have fallen under my own observation, have had their origin in conditions similar to those just described. Astigmatism, or some other faulty state of the vision, has most commonly been at the root of the malady, and it is of interest to mention that in the course of the onset, pain has commonly been complained of, not only at the base of the skull posteriorly, but also over the ciliospinal region, that is, over the lower cervical and upper dorsal vertebræ. In some of these instances the patients have learned to regard the pain over the spine as the herald of an attack of migraine.

Let me next refer briefly to a much more serious condition—the malady known as angina pectoris. This affection is the result of various pathological changes, and its mode of production is therefore somewhat diverse. But in this place the only form of angina pectoris which can be discussed in this connection, is that which depends

upon irritation of the vaso-motor system, the affection known in Germany as "angina pectoris vaso-motoria." In the typical form of this affection there is high arterial tension, which alone is enough to distinguish it from almost all other forms of angina pectoris, with pallor and coldness of the surface and an excited frequent pulse, caused by the struggle to overcome the obstacle to the passage of the blood into the capillaries which results from the contraction of the arteries throughout the body. It might be expected that the pulse should be infrequent with high tension, but it must be remembered that in all true cases of angina pectoris the heart is enfeebled. At times the vascular contraction may be local, but in by far the larger number of cases the arterial spasm is

general.

Brief reference may be made to the means by which the excitement of the vaso-motor center and the spasm of the vessels may be removed. For rapid effects, as you are all aware, no drug is to be compared to nitrite of amyl administered by inhalation, and for slower and more lasting influence nitro-glycerine is equally reliable, while spirit of nitrous ether is in many cases a most useful preparation in the affections we have been considering. The tropeine series of drugs must not be passed over in silence, as belladonna, stramonium and hyoscyamus, as well as their alkaloids, possess considerable efficacy in such cases, and lobelia and tobacco may be found of use in certain instances. We may also fall back upon chloral and several products of distillation, especially chloroform and ether, if any of the substances just mentioned cannot be employed in the treatment of such affections.

In the next place there are symptoms arising from depression of the vaso-motor center which now claim our attention. Such symptoms, as has already been hinted, may possibly be found in the future to depend upon irritation of the vaso-dilator centers, but at present we can only explain them by reference to the vaso-constrictor apparatus. We shall, in the first instance, consider those belonging to the cutaneous and subcutaneous tissues. Passing reference was made to the fact that in the initial stage of acute general diseases, there is usually a tonic constriction of the vessels of the surface of the body, attended by cold and pallor; and it should be mentioned here that this stage is followed by a dilatation of these superficial vessels, associated with heat and redness.

The contraction is caused by irritation of the vaso-motor

center, and the dilatation by depression.

Patches of flushing were incidentally referred to in the remarks made upon the occurrence of blanched areas. Such association of pale and ruddy patches evidently depends upon an irregular excitement of the different parts of the vaso-motor centers, whereby certain of the nerves supplying the vessels are set into violent action, while others are profoundly depressed. In a few rare cases local perspirations follow flushing of areas of the skin, and in such instances there must be some excitement of the nerves supplying the sudoriparous

But much more definite appearances than these are common upon the surface of the body from vaso-motor action, and associated with various nervous disturbances there may be different results of cutaneous hyperæmia. Patches of erythema, or of prurigo, or of urticaria, may be developed in a fugitive manner, and the chief point to be noticed is that there is a great tendency towards the association of these diverse forms of disorder in the

same person and at the same time.

The subcutaneous textures are perhaps even more frequently involved than the skin in vaso-motor disturbances, and local cedemas of the arms or legs form an extremely common symptom of such disorders. Considerable pain is often the result of such conditions, on account of the pressure exerted on the sensory nerves of the affected regions by the fullness of the parts.

Vaso-motor influences frequently cause changes in the internal organs, and you will perhaps allow me to lay before you a few facts bearing upon cases of this nature. In doing so, only affections which may correctly be termed neurotic can be referred to, as it would be beyond the province of these remarks to

transgress further.

Cases of vaso-motor neuroses affecting the lungs have come under my notice. In such instances, sudden pain and breathlessness have called attention to the thoracic viscera, and the rapid development of a muffled percussion sound, and crepitations on auscultation, have led to the apprehension that pneumomia was impending. The temperature has in such cases, however, been nearly if not quite normal, and a few hours have seen the disappearance of every pulmonary symptom.

In the case of the abdominal viscera, similar conditions are even more striking. You know that a very large quantity of blood may be contained in the intestines when the splanchnic nerves have been divided, and in neurotic patients effects entirely analogous to the changes produced by section of these nerves are caused by disturbances of the vaso-motor system. In such cases it is permissible to speak of splanchnic paralysis. Its results manifest themselves by swelling of the abdomen, distinguished from flatulent distension by the want of resonance on percussion; and this enlargement is often attended by pallor and coldness of the whole surface of the body, along with empty arteries, which may be almost pulseless. In cases of this nature, as in neurotic affections of the thoracic viscera, the symptoms commonly vanish as

speedily as they appear.

A more common symptom, however, of neurotic troubles is what is known as nervous diarrhea. This is frequently to be observed in hysterical patients, but it also occurs in persons of neurotic tendencies without hysterical disturbances. The first case of the kind which came under my notice was a gentleman, who assured me that he was unable to attend church on account of this symptom. From personal knowledge of the vicar of his parish, it seemed to me that the patient was malingering in order to avoid the tedium inseparable from attendance on his ministrations, but wider experience has convinced me that this suspicion was unjust. Many cases of the kind have since been under my observation, and the point common to them all has been that the diarrhea invariably came on when the patient was at some meeting. It is, perhaps, more common among nervous schoolboys than any other class.

Upon the connection existing between the vaso-motor nervous system and the urinary secretion it will be proper to say a few words. If the renal nerves, which enter the kidneys by the hilus, are divided, there is apparently dilatation of the afferent vessels going to the glomeruli, followed by an increase in the quantity of the urine. It is further known that there is a point in the floor of the fourth ventricle, in front of the origin of the vagus, injury to which gives rise to the condition termed

hydruria.

It is hardly necessary to refer to the well-known fact, that disturbances in the mental processes cause changes in the amount of urine; such emotions as fear, for example, causes effects similar to those produced by cold externally; in both cases the superficial vessels are contracted, and the quantity of urine undergoes a great increase. The same effect is also to be observed as a symptom of various neuroses, no doubt dependent upon central disturbances, and usually associated with other

nervous phenomena.

But beyond such renal symptoms as those just described there are others of more importance. Albuminuria in young persons of both sexes, who inherit nervous tendencies, is not by any means uncommon. It has been explained in many ways, and, no doubt, may be caused by several different conditions; as it is, however, frequently found in patients who have no apparent disturbance of the nutritive processes, but who present signs of nervous disorder, the conviction has been forced upon me that the appearance of albumen in the urine is in not a few cases the result of vaso-motor influences.

Amongst the agents at our disposal for stimulating the vaso-motor system, strychnine deserves a high place, and its employment is in most cases followed by immediate benefit. But digitalis and the drugs which possess a similar action may be used with advantage, because they also produce a considerable degree of stimulation of

the vaso-motor mechanism.

You will perhaps allow me to say a few words in regard to the connection of the vaso-motor system and glycosuria. It is hardly necessary to refer to the fact that injury to the center of the vaso-motor nerves of the liver (the so-called "diabetic puncture") produces glycosuria. And it is almost as unnecessary to remind you that when the vaso-motor nerves which supply the liver are divided, glycosuria is also produced. In both of these experiments the liver becomes hyperæmic, the circulation in that organ is modified, and, in consequence of this, the hepatic cells can act with greater effect upon the glycogen; they, therefore, produce an excess of sugar.

But there are other facts not quite so well known, which you will perhaps allow me to mention briefly. There is, for instance, the fact that when the splanchnic nerves are cut, after glycosuria has been produced, the sugar is reduced in quantity or disappears entirely. This is probably caused by the reduction in the quantity of

the blood circulating in the liver, which follows the dilatation of the abdominal vessels consequent upon the division of the splanchnic nerves. And it must also be remembered that when the central end of the divided vagus, or depressor, or even sciatic nerve is stimulated, sugar appears in the urine—a fact which throws light upon the well-known clinical phenomenon of glycosuria following injury to distant nerves. In such cases the effect is a reflex one, and is undoubtedly produced through the vaso-motor mechanism.

The effect of such drugs as opium and codeine, which lessen the amount of sugar in glycosuria, is to be explained chiefly by their action upon the centers in the

medulla.

In many patients we find several of the symptoms which have been described linked together. We may observe, for example, in a patient who has a troublesome ear affection, a severe attack of migraine, associated with patches of erythema, and followed by polyuria. Or, in another case, there may be some error of the visual mechanism, causing pain over the cilio-spinal portion of the back, attended by local cedemas and a turgid abdomen, and ending in a free flow of fluid from the intestine. But in many cases several similar phenomena may exist together, apparently unconnected with any definite cause, such as, for instance, an affection of the special senses. In many of these patients, whether male or female, there will be found painful spots over the vertebral column, and for all such cases the application of iodine, or a blister, or the actual cautery over the spine, will be found beneficial, along with the continuous current from the medulla to the feet and hands, and the use of tonic remedies.—Edinburgh Medical Journal.

Abstract of Paper on Some Undescribed Respiratory Neuroses: Their Clinical and Physiological Aspects.*—By Andrew Smart, M. D., F. R. C. P., Ed.

I. Vaso-Motor Neuroses—Spasm—A. Respiratory center; accelerated breathing. B. Cardiac inhibitory center; accelerated cardiac action.

II. Inspiratory Neuroses.—Combined neurosis of vagi, phrenic nerves, and upper cerebral respiratory tracts. A.

^{*} Communicated to the Royal Medical Society of Edinburgh on the 10th of February, 1888; also to the Medico Chirurgical Society of Edinburgh, on the 2nd of May, 1888; and, in its completed form, to the British Medical Association, at its annual meeting held in Glasgow, in August, 1888.

Arhythmical respiration; diaphragm spasm; interrupted and variously modified respiration. B. Suspended respiration; diaphragm tetanus, with or without general respiratory muscular spasm; arrested respiration in the position of complete inspiration.

III. Expiratory Neuroses.—Superior laryngeal, olfactory trigeminal nerves. Successive expiratory explosive efforts; Expiratory spasm in the position of complete expiration;

suffocative dyspnœa.

IV. Respiratory Dysphagia.—Glosso-pharyngeal neurosis. A. Abnormally suspended breathing during deglutition; deglutition dyspnæa. B. Abnormally accelerated breathing during deglutition; choking deglutition, and general dysphagic distress.

V. Multiple Complex Respiratory Neuroses .- A. "Cere-

bral respiration." B. "Cheyne-Stokes respiration."

The above abnormal conditions of respiration have not, with the exception of the "cerebral" and "Cheyne-Stokes"—the statements regarding which are partly founded upon misconception of their true nature—been previously described.

The results, obtained by clinical methods only, are compared with recent physiological experimental research,

and their agreement of differences pointed out.

The communication is accompanied by respiratory tracings and drawings of the various neuroses referred to.

The function of respiration undergoes remarkable changes when the nerves which regulate it become disordered from any cause, or when their normal activity is in any way interfered with. The first cash referred to was that of spasm brought on by slight emotional disturbances. The spasm lasted 50 seconds, and in that space the patient breathed 132 times, whilst during the same interval the heart registered 212 pulsations. case was only one of a group which Dr. Smart cited to illustrate the effects resulting from vaso-motor spasm of a particular seat of the brain. Referring next to a second class, it was explained that the vagus and the phrenic nerves (the two chief nerves of breathing), from their combined control of the entire respiratory movements, were the prolific source of many and sometimes grave disorders, not only of breathing, but of the respiratory muscles, implicating sometimes all the other muscles in general convulsive spasm and suspension of breathing for a time. This mode of disturbance he describes as "inspiratory neurosis" inasmuch as, when these nerves-were so excited, respiration was always stopped in the position of full inspiration. The third disorder referred to was that of the nerve of expiration. Irritation of this nerve or its center excited persistent cough, going on until spasm and threatened suffocation were imminent. This condition as a symptom was characteristic of a number of maladies, especially of whooping-cough, which Dr. Smart said might be viewed as a disordered state of that nerve. A fourth respiratory neurosis was described under the designation of "respiratory dysphagia," connected with the function of swallowing. It was explained that it had been definitely ascertained that there was a nerve whose function it was to stop breathing during the act of swallowing, and interference with that action caused difficulty of breathing during meals. The troubles were of different kinds, which were fully described according to the nature of the disorder of the nerve. Dr. Smart concluded by referring to "cerebral" and Cheyne-Stokes breathing, the only two modes of abnormal respiration which have been described and figured by respiratory drawings. He showed, by means of respiratory tracings, that the former was misconceived and wrongly interpreted as a sign of disease, and that it was generally confused with that of Cheyne-Stokes respiration. The latter, Dr. Smart remarked, was characterized by rhythmical periodicity, a difference of great significance absent in the other, which is a continuous respiration. He considered the occurrence of Chevne-Stokes breathing of the true periodic type as a sign of the gravest import. He furthermore believes that the stoppage of the periodic character of the breathing is brought about by the stimulation of a distinct center of respiratory inhibition. Dr. Smart's paper was copiously illustrated by drawings and respiratory tracings.—Edinburgh Medical Journal.

The Sciatica Attitude.—Professor Charcot, of Paris, in a recent clinical lecture, the translation of which appeared in a recent number, the Journal of the American Medical Association, pointed out the well marked attitude of a neurasthenic patient suffering from sciatica. Two years and a half ago Charcot noted for the first time this appearance, which is of some diagnostic value: "The trunk is inclined to the right; the vertebral column

describes a curve with the convexity to the left; the right hand descends much lower than the left; the left lower extremity is semi-flexed; the buttock of this side presents a flattening, the gluteal fold being elevated; finally note that the heel of the left foot does not touch the ground. This attitude, so characteristic, has never been pointed out, and yet it is a feature of a very frequent disorder, for this patient is suffering with sciatica. This shows you how the most apparent points in clinical medicine may remain for a long time unperceived. We carry with us, indeed, from our medical education a certain number of impressions from which it is extremely difficult to free ourselves. We have the habit of seeking only those things already described, and it requires long practice to acquire that independence of thought that enables one to see beyond his pre-conceived ideas. Often in this manner one finds traits so plain that it is difficult to explain how they have remained so long unrecognized, and usually they are at first received, even by progressive minds, only with scepticism. When I described for the first time the gross articular lesions of ataxics, those artropathies that nevertheless must have always existed, it was objected, particularly in Germany and England, that they were only to be seen at the Saltpêtrière. This scepticism has since disappeared, and to-day no one longer doubts the existence of these joint lesions. special, characteristic attitude of a patient suffering with sciatica, I have known scarcely two years."-Canadian Practitioner.

Proper Names in Neurological Literature.—*

Aran-Duchennne's disease Progressive muscular atro-Argyll-Robertson's sign Absence of pupil reflex. Addison's keloid Morphæa. Addison's disease Bronzed skin. Basedow's disease Exophthalmic goitre. Bell's palsy Paralysis of the 7th pair. Bell's spasm Convulsive facial tic. Bergeron's disease -Rhythmic localized chorea. Brown-Sequard's syndrome Hemiparaplegia, with hemianæsthesia of the other side. Lupus erythematosus. Cazenave's lupus

^{*} We place these among the neurotrophic lesions.

2	
Charcot's disease	Ataxic arthropathy.
Charcot's "	Lateral amyotropic sclerosis.
Cheyne-Stokes' Respiration	Uremic respiration
Dress'er's disease	Paroxysmal hemoglobinuria.
Dubini's disease	Electric chorea.
Duchenne's disease	Locomotor ataxy
Duchenne's palsy -	Pseudo-hypertrophic palsy.
Duhring's disease	Dermatitis herpetiformis
Dupuytren's disease -	Retraction of the palmar apo-
1 7	neurosis.
Erb's palsy	Paralysis of the roots of the
210 5 parsy	branchial plexus.
Erb-Charcot's disease -	
	Spasmodic tabes dorsalis.
Friedreich's disease -	Hereditary locomotor ataxy.
Gerlier's disease	Paralysant vertigo.
Gibert's pityriasis	Rosy pityriasis.
Gibbon's hydrocele -	Hydrocele with voluminous
	hernia.
Gilles de la Fourette's disease	Motor inco-ordination with
	echolalia and coprolalia.
Graves' disease	Exophthalmic goitre.
Graefe's sign	Dissociation of the movements
014616 3 31811	of the globe of the eye and
	of the upper eyelid.
Habra'a diagaa	
Hebra's disease	Polymorphous erythema.
Hippocrates' facies	Agonized facies of impending
	fatality.
Jacksonian epilepsy -	Cortex epilepsy.
Kopp's asthma	Thymic asthma; spasm of the
	glottis.
Leber's disease	Hereditary optic atrophy.
Mêniére's disease	Labyrinthine vertigo.
Morvan's disease	Analgesic paresis of the ex-
	tremities.
Parrot's disease	Syphilitic psuedo-paralysis.
	Dilatation of the pupils on
Parrot's sign	
T) (1 1:	pinching the skin.
Paget's disease	Hypertrophic, deforming os-
	teitis
Parkinson's disease -	Paralysis agitans.
Parry's disease	Exophthalmic goitre.
Potts' aneurysm	Anastomotic aneurysm.
Potts' fracture	Fracture of the fibula by divul-
	sion.
Potts' disease	Vertebral osteitis.

Raynaud's disease	-	-	Symmetrical	asphyxia	of	the
			extremities			

Romberg's sign	-	-	Unsteadiness	of	ataxics	in
			darkness.			

Romberg's	trophoneurosis	Facial	hemiatrophy

Trousseau's disease	-		_	Vertigo-e-stomacho-leso.
Werlhoff's disease		-		Purpura hemorrhagica.
Westphal's sign	-		-	Abolition of patellar reflex.

For the most of the above tabulated personal synonyms we are indebted to our indefatigable and always

instructive foreign contemporary, La France Medicale.

MATERNAL OPIUM HABIT AND THE OFFSPRING.—Dr. F. B. Earle (*Medical Standard*, Vol. III.) delivered a thirty-two-year old woman of a healthy ten-pound girl. The mother's three preceding infants had died within a few days after birth. Concerning these deaths the following

history was obtained:

The first child was born healthy, but pined away in two and a half days. The same phenomena were present in the case of the second child, which died three days after birth. The third child died under the same circumstances in four days after delivery. Matters progressed favorably until the end of the third day, when Dr. Earle was informed that the child did not sleep and seemed troubled with colic. The child seemed particularly sensitive to motion, looked pale and pinched, and singularly prostrate. The milk had not appeared. Twelve hours later I was recalled in great haste, and arrived at the house in a few moments to find the child pulseless and cyanotic, and in five minutes it was dead. Here was a history of four apparently healthy children, born at full term, all of whom had died before they were four days old. Upon what basis could this be explained? There was no history of a taint of constitutional disease, and no trace of syphilis or other constitutional disease in the

father, a healthy, active, robust man, whose entire personal as well as family history, is good; his brothers and sisters have healthy grown children. The patient was a widow with two children when he married her. Inasmuch as the children by a former husband were living and healthy, he placed the entire responsibility of these deaths on himself. A druggist of the vicinity a few days later stated that the mother was a victim of the opium habit, and since her residence in his vicinity, a period of about five months, she purchased from twelve to fourteen grains of morphine sulphate daily. Another druggist had for three and a half years previous to her change of residence, supplied her with the same amount. This covers a period during which the last three children were born. The husband lived in ignorance of this habit, so that for facts pertaining to the duration of the habit previous to this marriage and to the amount consumed, Dr. Earle was dependent on the uncertain statements of the woman herself, and on the definite statements of the family physician, Dr. Wadsworth. According to her own story she began at the age of seventeen taking morphine on a physician's prescription. Not knowing the nature of the medicine, but finding that she felt better when taking it, she repeated it. She was married at eighteen, and the two children before mentioned were the result of this union. She was attended in these two labors by the physician who first prescribed morphine, and knowing her habit, he directed that the children have soothing syrup, which was done, and these two children survived. Two years after the birth of the second child she became a widow, but was again married at the age of twenty-five, and has borne four children by her present husband. In regard to the quantity taken, she informed me that since this last marriage she had consumed from five to eight grains daily, but that she was taking more at the time of the birth of the children by her first husband. The physician at whose door the patient places the responsibility of her habit, states that his first acquaintance with this lady dates back 18 or 19 years, at which time he was called to see her mother, who was an opium-eater, and who had taken an excessive dose of tincture of opium. He denies in toto her story of having prescribed morphine. He is positive that she was not taking the drug at the time he attended her in her labor, and that he did not order the babes soothing syrup. He

also states that these children were perfectly healthy, and that they were raised without the slightest difficulty. The contrast between these statements is very apparent; but inasmuch as the physician was a learned reputable man, and the woman belongs to that class of inebriates whose every instinct is deception, the truth of the matter is easily settled. There can be no doubt about the time she contracted the habit. According to her own statements, she is at present consuming from 5 to 8 grains daily. Two reliable pharmacists state that the quantity amounts to 12 or 14 grains daily. Granting that she consumes 10 grains daily, what effect would this amount have on the ficetus in utero? Would it in any way affect its nutrition, or pervert the functions of its organs, so that it would be incapable of sustaining life when dependent solely upon itself; or would the sudden withdrawal of a prolonged stimulant account for the death? regard to the development of the child it seems to have had no effect whatever, because it was a perfectly robust child at birth. On the sudden deprivation of morphine, Dr. Levenstein, of Berlin, says: "There are two objections. First, the terrible pain, and second, the danger of serious and even fatal collapse." Dr. Bartholow has also pointed out the objections to the sudden removal of the drug. Dr. J. B. Mattison says that the supply should be diminished as rapidly as possible, but that tonics must be given in full doses. These men, clinically familiar with the opium habit, unite in pointing out the danger of suddenly depriving the habitue of his stimulant. are familiar with the habit as it occurs in adults only. If to one of mature organism the removal of the daily quantity of morphine produces shock and even death, how much more should we expect to have the same condition manifest in a baby three days old! It will be readily admitted by those familiar with the subject, that the morphine habit is gaining ground with startling rapidity; that married ladies and widows form the largest class who are slaves to the habit. What, then, shall we do with pregnant women who are victims of this degrading vice? and what treatment can be resorted to to prevent the mortality of children where the practice cannot be abridged? Whether or not premature birth would be the result of an attempt to reform the pregnant woman, is as yet undetermined. In regard to the treatment of the child where we know the habit exists, but cannot

prevent the use of morphine by the mother the only logical way is to administer some substitute, or appropriate doses of some of the most palpable and least objectionable preparations of opium, in diminishing doses, until such time as the drug can be safely taken away altogether. In the discussion Dr. Haven stated that he attended the woman during one of her confinements, and the child, deprived of the mother's milk, manifested the

phenomena described by Dr. Earle.

Dr. Kiernan said that the influence of drugs like morphine on the maternal organism, was exerted on the reproductive apparatus and the ovum. As had been shown by naturalists, certain species of pigeons, whose ancestors had fed on poppies, were relatively intractable And the same fact was pointed out by Dr. to opium. Murrell about persons descending from Bedfordshire (Eng.) natives, whose ancestors had used infusions of poppies as a prophylactic against malaria. The infantile mortality among these people was not stated, but nervous diseases were relatively prevalent in these districts. As Morel had pointed out, narcotic habits in the ancestors produced descendants in whom the normal checks on excessive nervous action were removed, so that paranoiacs, periodical lunatics, epileptics, hysterics, congenital criminals, congenital paupers, or otherwise degenerable beings, resulted. This influence was most strongly exerted when the maternal ancestor was the one affected, for, as Spitzka had shown, to her was committed the development of the ovum prior to conception and of the child subsequently. If either was interfered with by a habit, a being defective in some respects was the result. dealing with the cases reported by Dr. Earle, the fact should be remembered that as the researches of Ball, de Monteyel, Manning, Mays, and those of Dr. Kiernan (ALIENIST AND NEUROLOGIST, 1887,) himself had shown infantile mortality was very great among the neuropathic class. With regard to the direct influence of the opium habit in mothers and on the offspring, Dr. Amabile (Western Druggist, 1887,) had shown the children of opium smokers were somewhat intractable to opium, but that such children were apt to die suddenly. Dr. Alonzo Calkins ("Opium Habit," 1871) had reported several cases illustrating the facts described by Dr Earle. Dr. Levenstein found by experiments on pregnant dogs and rabbits, that the use of opium during pregnancy, produce

either abortion or still-births, or rapidly-dying offspring. Dr. Hubbard had discussed the very question raised by Dr. Earle, and said the treatment of the opium habit must be postponed until it will not imperil mother or child. He reported cases presenting the same phenomena as described by Dr. Earle, in which opium was given with the result of improving the physical condition of the children who grew stupid. Dr. Kiernan was acquainted with two similar cases. The habitue would abort if deprived of opium. Dr. Hubbard ("Opium Habit," p. 90,) believed that the smallest portion necessary to sustain the life of the child should be ascertained in these cases. The child should then be allowed to regain strength, after which the dose should be reduced and the same treatment pursued as in other cases of the opium habit.

DEBOVE ON THE PERMANENT SLOW PULSE AND URÆMIA. -Referring to those cases of permanent slow pulse (28 to 30 per minute), in which Charcot has said a medullary lesion must exist, the author has, in just such a case, examined the medulla and found no lesion. He recently had under his care a man of eighty, who had been seized during a course of dyspnœic attacks, with syncope and epileptiform attacks. His pulse was 32. His heart and lungs seemed normal. He was passing about 600 cc. of urine a day, which contained from 7 to 8 grammes of urea and no albumen. Milk diet caused a diuresis and an increase of urea up to 20.5 grammes a day, and the dyspnæa disappeared, the slowing of the pulse continuing unchanged. Gingeot has seen the pulse rise from 32 to 40 on the accession of an acute bronchitis in a similar case, while the axillary temperature was 102°.—Le Practicien, Dec. 10, 1888, Amadon's Analectic.

Purpura Hemorrhagica after a Mental Shock.—Dr. Ed. De Smet, of Brussels, has reported a case of this kind in a young woman of a highly nervous temperament, who, in consequence of a severe fright, experienced an eruption of purpura hemorrhagica, though she had never had any eruption of the kind before. Some four months subsequently however, in consequence of a fall, a similar eruption made its appearance. The treatment was directed mainly to the nervous system, which was evidently very much affected. A fuller account may be found in the Baltimore Medical and Surgical Journal, from which this extract is taken.

NEURO-PHYSIOLOGY.

ON THE NECESSITY FOR A MODIFICATION OF CERTAIN PHYSIOLOGICAL DOCTRINES REGARDING THE INTER-RELA-TIONS OF NERVE AND MUSCLE. - By Thomas W. Poole, M. D.

Electricity a Paralyzing Agent.—Prof. Tyndall tells us that a mere trace of iron in the coils of a galvanometer, of even such splendid instruments as those used by Prof. Du Bois Reymond in his researches on animal electricity, caused a fallacious deflection of the needle, to the extent of thirty degrees and more. (Heat as a Mode of Motion, p. 34.) It is therefore not to be wondered that erroneous conclusions were sometimes arrived at in experiments so beset with fallacies, even when conducted apparently with the greatest care.

So mysterious a force, which exhibits itself alike in the lightning's fiash, in a tiny spark and in the quiver of the eminently sensitive protoplasm of a muscle, might well excite wonder and enthusiasm. As investigation proceeds, however, the exaggerated ideas as to the important part played by electrical currents in the phenomena of nerve and muscle, and even of life itself, which prevailed some years ago, have been rapidly on the decline among students of electro-physiology; but will doubtless linger long in the popular and even in the professional mind.

But electricity is not nerve force, nor can it cause the generation of nerve force, which is impossible in a mere nerve trunk separated from its nervous center. This must be obvious. If it produce effects equivalent to a loss of vital action such as occurs in the death or destruction of portions of the nervous system, it must be classed as a sedative and not as a stimulant. In the experiments about to be mentioned the currents employed are those used for ordinary physiological and therapeutic

purposes.

The effect of such a current applied to the inferior laryngeal nerves is to induce spasm of the muscles of the glottis. "The rima is completely closed." (Dr. B. Sanderson, Hand-book, p. 308.) That is to say, it does precisely what we have seen above is done by section and paralysis of these nerves. Applied to the lower ends of the vagi it causes contraction of the œsophagus and stomach and "in most cases vomiting." (Meyer's Prac. Elec. Hammond, p. 87.) Just as we have before seen, results

from section of those nerves. We have had proof that section of the spinal cord and of vaso-motor nerve trunks induces contraction of corresponding arterioles. Similar effect is produced by electrization of the same parts, the caliber of the arteries being sometimes reduced to onesixth of their normal size. (Weber-Meyers. Ib., p. 88.)

Dr. M. Foster tells us that section of the spinal cord at the medulla, or in the dorsal region, arrests the secretion of urine; and such a section of the cord is of course a paralyzing act. He also tells us that electrization of the spinal cord below the medulla also arrests the secretions of urine. Then is not this a paralyzing act also? It is unnecessary to multiply examples. Shall we continue to call an agent a stimulant, and refer to it as an excitant of nerve activity, the ordinary effects of which on nerves are equivalent to nerve section, nerve paralysis and

Mild Currents Paralyze.—It is sometimes said that powerful currents may paralyze and even kill, but that mild or weak currents merely stimulate or excite. there any proof of this? Where in the records of electrophysiology do we find a claim for opposite effects from weak and strong currents? It is true that we are cautioned against the depressing effects of long-continued applications of even mild currents. But this is not to the present point. The short seance, with its mild currents, may and probably does afford a simulation of increased vigor, but this is mainly due to the moderate exercise which it gives the muscles and their consequently improved nutrition (Drs. Beard and Rockwell); perhaps also in some degree to the mental impressions of the patient. The longer seances, with stronger currents, are fatiguing and exhausting in proportion as they are depressing or paralyzing.

Is it not true that the weakest current which can effect a muscle at all, causes a momentary contraction of the muscle; and that the strongest current that can be borne during life, or that can be brought to play upon a still irritable nerve and muscle after death, simply produces a more vigorous effect of the same kind; the contraction becoming continuous in spasm or tetanus? It is never contraction on the one hand and relaxation on the other, unless, indeed, other conditions intervene and muscular contractile energy is at an end. As a matter of fact, weak and strong currents act precisely in the same

manner, and differ only in the lesser or greater contraction of the muscle which they produce. The process is a uniform one, as indeed it must be, since a purely physical force cannot change its character, and play fast

and loose in the mode of its operation.

The treatises on this subject bear ample evidence of the paralyzing effects of electrization when even weak currents are used, as could only be the case for therapeutic purposes. Althous found that the electric current produced an anæsthetic and paralyzing effect on the ulnar and sciatic nerves. Drs. Beard and Rockwell tell us that "in rhinitis pharyngitis and laryngitis"—where only very mild currents are admissible—"they have for years been accustomed continually to make use of the benumbing effects of electrization." (Med. and Surg. Elec, p. 123.) Even "weak electrization of the upper part of the neck may arrest respiration," as well as produce spasm of the glottis and of the muscles of inspiration. (Ib., p. 133.) Currents necessarily weak, because applied to the neck of "a sensitive young lady," induced anæmia of the brain, with drowsiness and other effects indicative of arterial contraction. (Ib., p. 134.) Other authors equally allude to the "paralyzing effects of the constant current." (Valentine, Matteucci, Eckhard, Meyers.)

From these considerations I hold that there is no evidence whatever that weak and strong currents produce opposite effects, or that one may paralyze and the other

stimulate.

Direct and Inverse Currents.—A great deal has been written about the different effects of direct and inverse currents. Dr. J. Russell Reynolds, in reply to the question, "What current should I use to relieve pain and spasm, the direct or inverse?" answers: "All I have to say is that so far as I have seen it does not make the smallest difference. Theoretically it makes a very great difference, but practically it makes none." (Clinical Uses, etc., p. 18.) Now, I think that the evidence showing that both these currents are paralyzing is indisputable. Take the direct current first. A nerve-muscle preparation is prepared. To the middle of the nerve trunk a salt solution, or the poles of an induction battery, are applied, and in either case the effect is so regulated as just to fail to cause a contraction of the muscle. If, now, the poles of a galvanic battery are applied to the distant end

of the nerve-trunk, the P. pole furthest from the muscle, so as to produce a direct current, throwing the lower end into catelectrotonus, the muscle will contract at once. Hence the direct current is said to increase the irritability of the nerve. But electricity is not nerve force, and nerve force cannot be generated in a mere nerve trunk. The true change in the nerve is not one of increased strength or vigor; it is simply that the feebly paralyzing action of the salt solution, or of the induction battery, has been supplemented, or re-inforced, by the additional paralyzing wave of the direct current, and nerve force is for the moment annulled. What is just asserted is nothing new. Thus, "According to Volta, both directions of the current are depressing in their effects." (M. Meyer, p. 57). Prof. Matteucci found that "the direct current" not only "diminished the excitability of nerves," but produced in them "a temporary paralysis." (Braith. Epit., Vol. II., p. 661.) Dr. W. B. Carpenter wrote, "The direct current weakens and at last destroys the excitability of a nerve." (Hum. Phys., p. 351.) So much for the direct current.

The inverse current produces in the nerve trunk, between the electrodes and the muscle, a condition of analectrotonus, which is admittedly one of "diminished irritability," which term is in itself an acknowledgement of lowered vital activity, which can only be accounted for as a degree of paralysis, and is induced by weak as well as relatively strong currents. Dr. C. B. Radcliff states of M. Eckhard: "This very able physiologist has ascertained that so long as the inverse galvanic current is closed it is impossible to produce contraction of the muscle by pinching, pricking, or otherwise acting on this part of the nerve . . . which is consequently in a state of suspended irritability." (Epilepsy, etc., p. 75.) This is a state of paralysis, because "a nerve that is deprived of its irritability can neither receive impressions

nor transmit them." (Ib., p. 78).

Drs. Beard and Rockwell say that "in regard to the differential action of the ascending and descending currents there has been an almost infinite amount of shallow observation and impulsive writing." These writers offer ample evidence that the effects in question are due, not to current direction, but to the physical effects of the poles, at one of which acids accumulate, and alkalies at the other.

Two Experiments.—Here are two experiments which show that the combined effects of strychnia poisoning and electrization are equivalent to the destruction of the spinal cord. In a rabbit undergoing the convulsions of strychnia poisoning, the spasms will be at once arrested on breaking up the spinal cord by a wire thrust into the spinal canal. If instead of destroying the spinal cord in this manner, it be subjected to electrization, the spasms will be averted, or arrested if already present. The rabbit dies, but without the characteristic spasms. (Matteucci, Periera, Radcliff.) Is a powerful electric current needed here? Not at all. Quite a moderate current will suffice; because the strychnia poison is causing general contraction of the arterioles (Fothergill), filling the veins and deoxygenizing the blood. Asphyxia is also setting in from the same cause, joined with fixation of the chest by spasm of its muscles, whose motor nerves are being paralyzed (Ringer). Electrization produces parallel effects and intensifies the fatal processes already in operation. A weak current suffices to complete the arterial emptiness, the venous engorgement and the nonoxydization of the blood. The spasms cease probably because such blood as is now present is inimical to the life of the muscle, and destroys its contractile energy more rapidly than no blood at all. (Foster, Phys., pp. 126, 833.)

If the theory of the day were true the rabbit ought not to have died! With the stimulating and vitalizing action of an electric current, added to the previous exhilaration of strychnia stimulation the rabbit should have lived and flourished, in the interests of the theory, which alas! as usual, is found to be out of harmony

with the facts.

Why does Dr. J. Russell Reynolds say that "it would be very unwise to use any form of electricity during the period of shock?" (Lect. on Clin. Uses, p. 84.) Why do eminent authorities discourage its employment in cases of suspended animation, as in apparent death from drowning? (Dr. Ringer, Ther., p. 792.) Why does Dr. B. W. Richardson, F. R. S., of London, write: "I feel it too unreasonable to recommend galvanic action as a means of resuscitation in threatened death from chloroform."

. fearing lest under the semblance of restoring life he should clench death! (Med. Times and Gazette, 1861; Braithwaite, Jan., 1873, p. 256.) These are precisely

the conditions under which a "stimulant, tonic and vitalizer" should be eagerly sought for and diligently employed! It is evident that electrization is none of these, and therefore it is forbidden "in any form."

I think I am justified in claiming for the foregoing facts that they prove, as fully as any doctrine in physiology can be proved, that electrization as ordinarily

employed is a paralyzing process.

Beneficial Effects of Electricity.—Electricity is no doubt a valuable therapeutic agent, and, like other paralyzing agents, does good in appropriate cases. But its beneficial effects may all be accounted for in strict accordance with its rôle as a paralyzer of nerve activity. Thus, it eases pain in a perturbed nerve by temporarily paralyzing it. It lowers the activity of the vaso-motor nerves, and by thus setting free the contractile energy of the muscle it reduces the caliber of the arterioles, lessening or curing congestion, and consequently starving the hypertrophic growths. In other cases, by a momentary arrest of nerve action in the motor trunks, it induces prompt spasmodic contractions in the muscles, thus exercising them, and by attracting blood and pabulum to wasted muscles or tissues in the same way, it improves their nutrition. In chronic indurations and hyperplastic growths the purely chemical effects of the opposite poles, or electrodes, so modifies the nutritive activities of the tissues as to prove beneficial in restoring a more normal condition. Thus the curative effects of electrical treatment are all accounted for in strict accordance with its rôle as a paralyzing agent. To proclaim it, therefore, as "nature's own tonic," or to laud it as a "vitalizer," or extol it as the ally of nerve force, may be pardonable in the instrument makers, but is to be condemned on the part of scientific medicine.

Sense of Smell in Criminals.—Dr. Salvatore Ottolenghi, assistant to the chair of Legal Medicine at Turin, under the direction of Prof. Lombroso has made a study of this subject, which he summarizes as follows in *Giornale della R. Academia di Medicina di Turino*, Nos. 8, 9, 10, 11. Many conditions are necessary in order to accurately graduate this special sense of smell. Humboldt has written that savages, the American Indians, have the sense of smell as delicate as the animals, which is quite possible. Volta, in 1792, attempted by electricity to voluntarily

increase this sensibility. Valentin and Clemens were the first to use different odorous substances in order to note the strength of stimulation which they have. In 1883, in the Gazette Medicale, there was a paper of many pages upon the time of reaction of olfactory sensations. turi has specially noted the sense of smell in the insane: Nichols and Bailley in women (Revue Scientifique, Vol. I., No. 6, 1887). This sense had not been made the object of special studies in criminals. Dr. Salvatore Ottolenghi has filled this want. It is only with great difficulty that one could carry on this curious experimentation for many causes of error were possible. The author made a sort of osmometer from twelve aqueous solutions of essence of cloves in an increasing degree of concentration, contained in so many similar vials corresponding to the twelve degrees of concentration. The vials were placed without any apparent order and left to the nose to classify in order. The examination related to eighty of the criminal class, fifty men and thirty women, and fifty ordinary persons, thirty men and twenty women. These individuals did not use tobacco, had no affection of the nasal passages and had not exercised any profession capable of affecting the smell. From these experiments the author has drawn the following conclusions: 1. The sense of smell is less developed in criminals than in other men. 2. This sense is a little less in women than in men. 3. In female criminals it is still less than in other women.-L'Union Med., Feb. 5, 1889.

CASTRATION AND THE DEVELOPMENT OF THE GENITAL TRACT.-Dr. Kehrer castrated rabbits between two and three months of age, and killed them one year later. Unilateral castration caused no arrest of development. When the operation was performed on both sides, the genitals and mammary glands remained stationary, not developing beyond the stage which they had attained when the essential organs were removed. Dr. Kehrer attempted to prove which theory was true-Pflüger's, according to which there existed in the uncastrated female a stimulus to growth through periodical irritation of the ovarian nerves set up by ripening of follicles, which goes on long before puberty; or, on the other hand, the theory that spaying caused a disturbance of the blood-supply of the remaining genital organs, through the occlusion of the ovarian arteries. For this purpose he ligatured

the ovary and ovarian artery in two series of experiments. He found that neither in unilateral nor in bilateral ligature of tubes or extremities of the uterine cornua, with separation of the ovarian arteries, was the development of the genitals in any way affected. He concluded that the ovarian nerves, or some other and unknown influence in connection with the ovaries, played the most prominent part in stimulating the development of the genital tract.—

Kansas City Medical Record.

REFLEX OR AUTOMATIC SPEECH.—Dr. Geo. M. Robertson (Jour. of Mental Sc., April, 1888) concludes: That actions seemingly the result of great intelligence may be in reality mainly automatic and reflex; that in speech there are all causes in action which tend to develop reflexes; that in health reflex speech is commonly inhibited, but that in exceptional circumstances it is well displayed; that in some mental diseases reflex speech exists in an exaggerated condition; that the path of reflex speech is a well organized one—strongly resists destruction.

PSYCHIATRY.

Hahnemann on Insanity.—In 1796 Hahnemann wrote: "Mental disease may not be fully developed, or there may be some doubt as to its origin from physical disease, or from educational errors, bad habits, corrupt morals, neglected mental training, superstition or ignorance. In these cases the following will serve as means of distin-

guishing the cause:

"If the mental affection is based on the last named class of causes, it will yield and improve under the influence of sensible admonition and consolation, or of serious remonstrances and arguments; while real mental disorders arising from physical disease, are rapidly aggravated by the same measures. Thus, melancholy patients will be still more depressed, plaintive, disconsolate and retiring; the malicious maniac will be still more embittered; and the silly prattler will not display the slightest degree of attention.

"Indecent behavior and obscene language are to be treated with indifference. The destruction and injury of

objects should be simply prevented by placing them out of reach, without reproaching the patient for his conduct; furthermore, the treatment should be conducted with a view to the absolute avoidance of corporeal punishment or torture. The administration of medicines would alone justify coercion; but this is easily to be avoided, on account of the smallness of the dose and absence of taste of homeopathic medicines. These do not excite suspicion, and may, therefore, be given to the patient, mixed in his usual drink without his knowledge, thus obviating every kind of compulsion. On the other hand, contradiction, incessant argument, violent remonstrance and vituperation, no less than weak and timid submission, are altogether out of place and alike hurtful as a means of treating diseases of the mind. There is nothing that embitters the insane and augments their diseases so much as expressions of contempt and ill-disguised deception. The physician and attendant should always treat such patients as if they regarded them as rational beings. Therefore every disturbance of the senses and of the mind should be avoided. There is no entertainment to fascinate their benighted spirit; neither words, books nor other objects will soothe the rebellious soul, now roused to madness. now languishing imprisoned in the body shattered by disease. A perfect cure alone will bring comfort; rest and relief will return to the mind only when the body is restored to health. I never allow any insane person to be punished by blows or other painful corporeal inflictions. since there can be no punishment where there is no sense of responsibility, and since such patients only deserve our pity and cannot be improved, but must be rendered worse by such rough treatment. The physician of such unfortunate creatures ought to behave so as toinspire them with respect and at the same time with confidence; he should never feel offended at what they do. for an irrational person can give no offence. The exhibition of their unreasonable anger should only excite his sympathy and stimulate his philanthropy, to relieve their sad condition."

It is not surprising in view of the well-known effects of somatic disease on insanity that some patients infected with the "itch," on the antipsoric homeopathic principle should recover, but Hahnemann clearly was prompted to many of these dicta by his knowledge of what Pinel and Chiarrugi had done.

PSYCHOSES AFTER OPERATIONS UPON THE FEMALE GEN-ITALIA.—Werth, of Kiel (Centralbl. f. Gynäkol., Leipz., 1888, xii. 387), at a late meeting of the German Gynecological Society, said that he had seen psychoses developed six times after operations on the female genital apparatus: twice among thirty-two total extirpations, twice among one hundred and sixty ovariotomies, and twice among thirty-six castrations. Melancholia was the form of psychosis encountered, and it appeared twice from five to eight days after the operation, twice after two to three weeks, and twice after the patients had left the institution in which the operations were performed. There were three recoveries; one after fifteen days, one after four months, and one after six to eight months. In two there was no improvement, and in one the individual committed suicide three and a half months after operation.

Surgical shock both cures and causes insanity. Some ovarian sections cure by profound psychical diversion and impression without reference to the removal of local ovarian

disease.—ED.

NEUROPATHOLOGY.

Tabes Dorsalis—A Cerebral Disease.—Jendrassik (Deutsch. Arch. f. klin. Med., 1888, B. 43, 543) reports two typical cases, examination of the cords and brains of which leads him to believe in the cerebral origin of the disease. His cases showed certain peculiar alterations in portions of the cerebral cortex; alike in histological character, but different in seat from those found in dementia paralytica. The sclerosis of the posterior columns he regards as a secondary degeneration.

NEUROTHERAPY.

Removal of a Tumor of the Brain.—Dr. Bradford, of Boston, removed a tumor weighing nine drachms from the brain of a patient. The Boston Medical and Surgical Jour. says: "The symptoms, which had lasted about two years, were headache and double optic neuritis, with some vertigo

and vomiting, tactile hemianesthesia, most marked in the left arm, and loss of muscular sense in the arm, paralysis of the left arm, and partial paralysis of the leg, with contracture and exaggerated tendon reflexes, and convulsions, beginning with a sensory aura in the left wrist and clonic spasm of the left hand. The tumor was located by Dr. P. C. Knapp before the operation, in the ascending frontal convolution just below the level of the first frontal sulcus, and extending upwards and backwards. The correctness of the localization was proved by the operation. The patient, who was in a feeble condition, died of shock about three-quarters of an hour after the operation.—

Weekly Medical Review.

Strophanthus for Exophthalmic Goitre.—Dr. Dan'l R. Brower has reported, in the *Journal* of the American Medical Association for November 3d, 1888, some very satisfactory results with the tincture of this drug given in two-drop doses every six hours, gradually increased to ten, two cases recovering in a very short space of time, one of them within four weeks, and the third being greatly improved by the treatment.

EDITORIAL.

[All unsigned Editorials are written by the Editor.]

The Successful Management of Writers' Cramp.—Continued experiences serve only to confirm former expressions on this subject. Unvarying success usually attends the persistent employment of static electromassage in these cases, coupled of course with the requisite neuro-constitutional treatment, for professional cramp in whatever form we find it (and all who are obliged to carry prolonged dextrous movements far beyond normal limit of local and constitutional fatigue into extreme exhaustion, are liable to it), is a constitutional as well as local neurosis—that is, in the sense of apparent central and peripheral neuratrophia; the rhythmical equilibrium between central and terminal nerve and muscle waste and repair is disturbed; untimely and not wholly willed movements take place in the dextrously trained neuro-muscular channels of force expression. Volition and inhibition no longer regulate muscular movement to the satisfaction of the trained mind, and a consequent tactile ataxy takes the place of the normal and disciplined regularity.

It seems to us that this spasm of dextrous will movements, trained into automatic acts by professionals, like pianists, flute players and other musicians, engravers and other artists, singers and copyists, is due in every instance to constitutional fatigue and neuro-instability as well as local neuro-muscular exhaustion, and as such we find our success through combined constitutional and

local treatment.

We do not insist on absolute repose, but on diverted movement for the affected muscles, as we enjoin diversion and indirect rest for the over-wearied brain of the expert artisan or the dextrous professional.

Electro-massage and constitutional Franklinism or galvanism are the best of alteratives in their influence over the exhausted molecular movements of nerve and

muscular nutrition.

In this connection we note with pleasure that M. Brown-Sequard accepts this view, and Féró before the

Society of Biology has reported the recovery of a case of flute-players' spasm on these principles a little differently applied, viz., by massage and hydrotherapy, but electro-massage is always better and constitutional electricity is preferable to hydrotherapy without electricity. It must have struck other neurologists as it has us that we are at a loss for a sufficiently comprehensive name for this multiform malady—Scrivener's palsy, writers' cramp, professional spasm—all seem too restrictive, and we are not sure that the term spasm of the professionally dextrous, which we propose, or dextrous spasm, will embrace all the cases.

It may be, as Ross maintains, that some forms of writers' cramp belong to spino-neural paralysis only, but we incline to regard this affection and all kindred forms of expert movement cramp as a cerebro-spino-neural trouble.

Dr. John C. Dalton.—In the death of this distinguished physician, which took place on the 12th of February last, Medicine, it is needless to say, loses a man of mark and merit, a light that shone brilliantly and a heart that beat warmly for the profession and for all mankind. His age was but sixty-four years, and his best work was not finished when he died, for he was a man who lived to work. He was a native of Chelmsford and a graduate of Howard, Massachusetts. His original prize essay on the Corpus Leuteam, in 1851, was the beginning of his fame as a physiologist, and he filled successively chairs of physiology in different American colleges, the last, which he occupied since 1855, being in the College of Physicians and Surgeons, of New York, and in the Long Island Medical College Hospital. He was best known to science, and his memory will longest remain through the fame of his plain, practical and painstaking treatise on "Human Physiology," while his contributions on the "Topographical Anatomy of the Brain," and other papers, chief among them, "Experimental Methods," and "Doctrine of the Circulation," will likewise long survive in attestation of his genius, industry and zeal in scientific research. He taught pleasantly, plainly, and clearly, by terse and forceful verbiage, free-hand drawings and vivisections. Those who sat under his teachings became enthusiastic admirers of the man and devoted students of his theme. They loved the theme and the

teacher. He was a veteran survivor of the Union army in the late war. He was in the highest sense of these terms, a teacher, a scholar and a gentleman. We cannot call him back, and American physiology cannot readily replace him.

Milner Fothergill Deceased.—But yet he lives! The orator who garlands the memory of a departed hero; the architect who contrives cunningly for our comfort the homes in which we live; the scientist who, with proper verbiage clothes for us the naked beauties of nature in even more attractive form than nature unadorned, lives in our remembrance long after his spirit has taken leave of the body, because of the abiding pleasure bestowed. And so Milner Fothergill lives to day in our pages in what he wrote before his hand had lost its cunning, or his soul had taken its flight beyond our ken. We feel his kindly hand, and are en rapport with him still, through words that charm and enlighten. Thus are men's names made immortal.

Our Cotemporaries.—In the minds of the average European, and, with regret we state it, of not a few of our own countrymen who live a few hundred miles nearer the rising sun, St. Louis is a village on the edge of a howling wilderness, a town whose claims to the title of city, while the advantages (educational and otherwise) implied in the term, are of the crudest description. It is with pleasure, therefore, that we note that there is at least one medical journal published in our midst that is deemed worthy of an extended notice in one of the best and most conservative of the British medical monthlies.

In its January issue, the *Dublin Journal of Medical Science*, in the course of an article entitled, "Some Periodicals," pays some exceedingly handsome compliments to our ancient and honorable cotemporary, the *St. Louis Medical and Surgical Journal*. The article is too long to quote *in extenso*, but our friendly sentiments towards the editors, as well as an appreciation of the justness of the remarks of the *Dublin Journal* concerning their publication, will not permit us to pass it over entirely unquoted. Says our Irish cotemporary:

The St. Louis Medical and Surgical Journal, published monthly, was established in 1843, and shows no signs of abated vigor. It gives 64

pages of matter monthly, at an annual subscription of two dollars. It is thoroughly well edited, and there is a sprightliness of tone about it which relieves the solemnity almost inseparable from medical literature. If we were to suggest a motto, it would be "Ridentem dicere verum, quid vetat!" We might give many illustrations of not unpleasing sportiveness from the fifty-fourth volume, which we have been studying with great advantage to ourselves, etc.

The *Dublin Journal* then quotes at some length from the journal of our friends here, and *en passant* pays a deservedly high compliment to Dr. Ohmann Dumesnil, one of its editors, in regard to his views on the contagious-

ness, or rather non-contagiousness, of leprosy.

The ALIENIST AND NEUROLOGIST takes real pleasure in making these quotations, and thus showing that that entente cordiale, which is often so conspicuous by its absence between medical journals published in the same locality, really exists between it and the "oldest medical monthly in America," the St. Louis Medical and Surgical Journal, which for nearly half a century, in good and evil days, has made its monthly visits to the tables of successive generations of local physicians, and yet, like the answer to Turandot's riddle,

"Steinalt, nicht desto minder Steht's wieder jung und grün."

The Gynecologists are Learning How to Do It.—M. Apostoli, according to Rev. de Thérap., makes use of a faradic stream of high tension, applied to the uterus, either by means of a double uterine electrode, or of an electrode pushed into the vagina, the other being placed on the hypogastrium. The stream must never be powerful enough to excite pain. It has been long known to neurologists that electricity is an anodyne, and Onimus, the physiologist, suggested electricity for intrapelvic congestions a quarter of a century ago.

We might remind M. Apostoli here that galvanism would do just as well, and that he need not employ a uterine electrode, but by using simply a wet sponge electrode over the affected ovary and over lumbar dorsal spine, to be able to accomplish the same purpose with

far less inconvenience to the patient.

The Eastern Michigan Asylum and Dr. Henry M. Hurd.—The American Lancet justly estimates this asylum as "one that has gained an enviable reputation among

the people, medical profession and expert alienists. Each report finds it still advancing in the perfection of its methods of treating the insane, and in caring for those beyond the stage for treatment;" and of Dr. Henry Hurd, the distinguished superintendent, it says: "His genius for the work of managing the insane, and his love for all those engaged in the same, cements into an organic unity that produces results gratifying to all interests," in all of which we cordially concur, for we know the man.

A Prize for Demonstrable Lesions of Chronic Alcoholism.—The American Association for the Study and Cure of Inebriety offers the sum of one hundred dollars by Dr. L. D. Mason, Vice-President of the Society, for the best original essay on "The Pathological Lesions of Chronic Alcoholism Capable of Microscopic Demonstration." The essay is to be sent under a motto to Dr. W. H. Bates, 175 Remsen St., Brooklyn, on or before Oct. 1st, 1890. Careful microscopic slides are to accompany the essay.

The "Kansas City Medical Record" is one of the best of our Western exchanges, and Drs. Halley and Fulton, the accomplished editors, display good judgment in the prominence they give to neurological matters. The January number, besides giving the usual copious variety of matter, presents its readers with two very readable neurological papers, the one in the original department, by Dr. C. H. W. Casey, on "Dipsomania;" the other among its selections, on "The Continuous use of the Bromides," by Dr. L. W. Baker. The "Delineations of Insanity by the Insane," from the New York Medical Journal, and "Spiritualism and Insanity," from the British Medical Journal, are two other judicious and instructive selections in the January number.

The valerianates in melancholia, the treatment of chorea, of esthma, of hyperidrosis, of delirium tremens, and the heredity of the morphine habit, and deaths from cocaine, are the other neurological subjects presented in minor paragraphs. Drs. Fulton and Halley are making for the

Journal an exceedingly good professional record.

The Cuvier Prize Awarded to an American Scientist.—The many readers of the ALIENIST AND NEU-ROLOGIST, most of whom are students of natural science

as well as of psychiatry and neurology, will be gratified to learn that the Cuvier prize of the French Academy of Sciences has been accorded Prof. Joseph Leidy, the distinguished president of the American Academy of Natural Sciences.

This is a tribute to true merit. During the last quarter of a century he has had no peer (truly says the *Nation* in making this announcement):

Among the native-born, nor any co-laborer whose works have been held in higher repute by the savants of both Europe and America. As a comparative anatomist and microscopist he easily leads the field; and if in the department of vertebrate paleontology he has seen rivals grow about him it can yet be said that Dr. Leidy was the founder of the science in this country, and that to his pen belongs the records of the first important researches made into the extinct life of the Western Territories. To Dr. Leidy, likewise, humanity is indebted, in great part, for the determination of the nature of triching.

A Lucid Interval.—The Duke of Gloucester, familiarly known in his day as "Silly Billy," because of his being possessed of less intellect than amiability, once visited Bethlem Hospital or "Bedlam," as it was popularly called, to see the mad folk there. The prince, like many asylum visitors to-day, wanted just to get a peep at a particularly violent lunatic without the lunatic getting at him, and this is the way the duke was gratified and the effect of his visit on the lunatic, as Frith, in his "Autobiography," relates:

The duke: "Can't I get just a peep at him somehow, eh! without his getting at me?"

Keeper: "Sir, there's a small square opening in the door of the cell, through which he receives his food. It is barred. If your Royal Highness is so very desirous you might—"

"All right. Come along. Where is he?"

The royal visitor was led toward the bottom of a long passage. "Good gracious! What a fearful howling! Is that the man?"

"Yes, sir, and this is the cell-through that grating you can see the man."

The duke peered through the bars. The howling ceased, and the madman exclaimed:

"Hello! Why that's Silly Billy!"

"Good gracious!" said the duke, "He knows me!"

"Oh, yes," said the governor, "he has his lucid intervals."

A Cocoaine Habitue who recently died at Cincinnati, of traumatic tetanus, and a physician of ability and

former mark, took as high as fifty grains of cocaine a day, in from three to five-grain doses. The American Lancet states, that

He always said that he who died from the use of cocaine would retain his consciousness till the last, and this was the case. He was conscious to the very second of his death. He frequently made efforts to dispel the influence the drug held over him, but it was useless. He always looked forward to the time when he would be free from its hold, and hoped against hope.

The following

Hallucinations and delusions formed a prominent part of his symptoms. He imagined somebody, some enemy, was continually pursuing him, trying to kidnap him. He frequently thought he saw a dark lantern flashed at him. He would sometimes hear noises and imagine enemies were pursuing him in the night.

His appetite is also recorded by the *Lancet* as "capricious," eating but one meal a day; sometimes "eating a bit and walking about," and he "ate nothing for the three days previous to his death."

Acute Pulmonary Vasomotor Paralysis.—The Cincinnati Medical News discusses this subject as follows:

"At the last meeting of the Medical Society of London, Dr. B. W. Richardson called attention to a class of cases presenting such peculiar features as to warrant, in his opinion, the belief that the symptoms are due to a loss of nerve-power, resulting in acute vasomotor paralysis of the vessels in the pulmonary area. Though not common, most practitioners must be able to call to mind cases diagnosticated as pneumonia, where the patient rapidly dies of asphyxia in spite of all that can be done to check the morbid process. The cases alluded to by Dr. Richardson were mostly in women of a neurotic type. Under the influence of a physical or moral shock, not necessarily of any great intensity, nervous phenomena of a hysterical type manifest themselves, followed by intense prostration of body and mind. In the course of a day or two examination reveals the advent of pneumonic râles, and then, without fever, for the most part without pain, and without many of the characteristic signs and symptoms of ordinary pneumonia, the patient rapidly succumbs. Treatment in every case is utterly without avail. Not less interesting than the observations so carefully narrated, are Dr. Richardson's remarks on the effect of nitrite of amyl

in bringing about an identical condition of things in animals submitted to its influence. The pathological phenomena are those which physiology teaches us result from section of the nerves which innervate the lungs; and, on this ground, Dr. Richardson argues that the asphyxial phenomena which terminate the rapid and fatal course of this redoubtable disease are attributable to a sudden suppression of nerve power. It could hardly be anticipated that this addition to the medical nomenclature would pass unchallenged; and, while the paper will certainly call attention to a class of cases hitherto very imperfectly understood, his views evidently failed to find acceptance on the grounds put forward in their behalf. It appears certain that, to explain the sudden and violent breaking down which is met with in certain cases of so-called pneumonia, either some influence must have been superadded to the usual processes, or we must look to another category of causes altogether to account for the collapse."

The qualification, vasomotor, ought to make this term acceptable as a presentation of clinical fact otherwise inexplicable; and a treatment consisting, in part at least, of the valerianated and phosphorated ammonio-bromides, has in our experience proven salutary and salvatory.

Mistaken Methods with Maniacs.—As we write this the body of a worthy Catholic priest, who had befriended an erratic and morbid-minded young man, lies dead before the altar of St. Peter's Church, in Memphis, murdered by the hand which had been the recipient from the good priest of a thousand benefactions. Alfred Reeves is the young maniac's name; E. A. Ashfield that of the reverend father. The record gives the following detail, showing the old, old story, of the misplaced confidence and misjudged conduct of those non-expert amateur alienists who oppose the suggestions of the heart to the counsels of experience, with the usual result of the frozen viper put into the sympathetic bosom to be warmed into venomous life.

Reeves was employed during the summer of 1887 to attend a sodawater fountain. He was neat in person, pleasing of address and handsome. Father Ashfield, a ministrant priest of St. Peter's, met him, and a triendship sprang up between them.

Reeves was thrown out of a situation in the fall of 1887, and was unemployed for some time. Finally he secured a berth as assistant bar-

keeper on the Benton, a small boat that was plying between Memphis and Arkansas City. On one trip up he became insane, announced that he was the Messiah, and seizing Mr. A. B. Oliver, a planter from St. Louis Landing, Ark., around the waist, tried to jump overboard with him. Mr. Oliver resisted and called for help. The boat's crew overpowered the maniac, tied him hand and foot and lashed him to a stanchion. He raved fearfully for a time, but quieted down to a certain extent before the boat reached Memphis. He was put ashore here, and on the 7th of January his brother, Richard Reeves, applied for a writ of lunacy. He refused to accompany his brother to jail, and tried to kill him. Father Ashfield was informed of the fact and volunteered his services. He saw the maniac, conversed with him a few moments, and took him to the county prison in a hack without any difficulty.

In conformity with prison rules, Reeves was placed in a cell. raved wildly for a day or two, but made no attempt to hurt himself. Father Ashfield called on him daily, and after some urging prevailed on the authorites to allow Reeves to occupy a room in the dwelling portion of the jail. The priest furnished his room, bought Reeves a suit of clothing. an outfit of underwear, and established him as comfortably as circumstances would admit. He told the jailor that he believed the boy's mind was affected from the excessive use of cigarettes, and that he could be cured. The priest ministered to the wants of his patient as tenderly as a mother to those of her babe. He bought him dominoes and cards, and went to the jail and joined him in games, and indulged his whims with remarkable patience. Reeves' condition improved. He was frequently taken from the jail by Father Ashfield, for walks or drives about town, or out in the country. If the priest was unable to visit his protegée every day he always telephoned or sent him a message, bidding him be of good cheer.

After remaining in the jail about a month Reeves was tried by a jury de lunatico inquirendo, and pronounced sane. He left the prison with Father Ashfield, who secured him a place to board and paid for his keeping a week or two in advance. He did odd jobs collecting until late in the spring, when Mr. Robinson was prevailed on by Father Ashfield, to reinstate him as a soda-water salesman. He held the place only a short time, and was discharged for inattention to business. Though not a drunkard he associated with a dissipated set of men, and was frequently to be seen hanging around poker rooms and gambling houses long after midnight. Since he lost his position he lived from hand to mouth. He had carte blanche to eat at the priest's house whenever he chose, and he was a frequent visitor there.

Sunday night, about 11 o'clock, Reeves went to the house. He rang the bell violently, and Father Moran answered the call.

- "I want to see Father Francis," said Reeves.
- "He is at the German Church," was the reply.
- "Is Father Ashfield in, then?" asked Reeves.
- "Yes, but he has retired. What do you want?"
- "The fact is that I have had nothing to eat all day, and am hungry," said Reeves

Father Moran told him to wait a moment, and going up-stairs he got fifty cents, and returning gave it to the visitor. Reeves said he would go up to the Windsor Café and get something to eat, and left after having been invited to call next morning and take breakfast, which he said he would do.

Father Ashfield knew nothing of Reeves' call, he having come in about 10 o'clock from a visit to a parishioner.

Yesterday morning about 5:12 o'clock, Reeves again appeared at the door of the rectory. He was singing in a fine voice, and rang the bell violently. Sexton Patrick O'Rourke answered the summons. He thought Reeves was drunk and refused to admit him, telling him it was too early. Reeves flashed a knife before the sexton's face, and telling him to "stand back or I'll send you to hell," he shoved past him and ran up the steps.

The bedroom occupied by Father Ashfield is on the second floor, and on the left-hand side of the hall going in. The first room at the head of the steps is occupied by Father Edelin. He heard the sound of the dispute between Reeves and the sexton without gathering the sense of it, and emerged from his door as the lunatic mounted the stairs. Fathers Moran and Dunn also came out of their rooms to learn the cause of the disturbance.

- "Where is Father Francis?" asked Reeves, betraying no excitement.
- "He is at the German Church," replied Father Edelin.
- "Well, I want to see Father Ashfield," said Reeves.
- "He is not up. Step into the sitting-room and wait a few moments," responded Father Edelin.

Reeves made no reply, but passed by the Reverend Fathers and knocked at Father Ashfield's door.

- "Come in!" was the hospitable response from the chamber.
- "Reeves entered and closed the door. Two minutes later Father Moran heard a slight shuffling noise, followed by the sound of a heavy body falling to the floor. He opened the door of the bed-room and saw Reeves lying across the body of Father Ashfield, who lay on the floor at the foot of the bed. The priest lay on his stomach, with his neck twisted so that his right cheek rested on the floor. Reeves was caressing the corpse, and repeating the words:
 - "I love you, Father Ashfield; oh, I love you; but I had to do it,"

over and over again.

- "What's the matter here?" exclaimed Father Moran.
- "Get out of here," said Reeves, sternly, arising from the body.
- "Father Moran retired, and while he was consulting with the other priests as to what had better be done, Turnkey Turbeville arrived from the station-house, he having been summoned by Sexton O'Rourke to arrest Reeves for forcing an entry to the house. The officer opened the door and found Reeves bending over the body of his victim.
 - "What have you done?" asked the officer.
- "Oh, I just stabbed him to death, that's all," replied Reeves, equably.

Father Ashfield was just rising when his murderer rushed in. Reeves jerked off his coat, threw it on the floor, then grasping the neck-band of

his shirt beneath the collar with two fingers, gave a strong pull and tore the garment from him, leaving the collar around his neck. The priest remonstrated with him for his violence and approached him with the intention of soothing him. Reeves had the knife concealed, and as soon as Father Ashfield came near enough he plunged the keen blade into his breast twice. The heart was punctured at each stroke, and the priest never breathed twice after the first blow.

Reeves was taken from the house, and Dr. E. Miles Willet arrived. He turned the body over and examined the wourds. Both were between the first and second ribs. One was immediately over the left nipple and penetrated the left ventricle; the other was several inches to the right, and penetrated the fatty part of the heart. Either wound would have caused instant death.

The knife was a light buckhorn mounted affair, with a long, slender blade.

After Reeves was arrested he undressed himself after being locked up, but put on his clothes again when ordered, buttoning his shirtless collar and gathering his coat up around his throat. He seemed absolutely indifferent about his fate. He would talk to people he knew, but would say nothing to strangers. He recognized Dr. E. Miles Willet as soon as he entered the room, and talked rationally to him, until some one else put a question to him, then he said he didn't care to say anything more.

Dr. Willet asked him several questions touching the friendly relations existing between him and Father Ashfield, and he replied that he knew the Father was his best friend.

- "What did you say to him before you killed him?" asked Dr. Willet.
 - "That's a private matter," said the prisoner.
 - "Did you have a struggle before you stabbed him?"
- "I had rather not answer that question just now," was the reply, made in a hesitating manner.

George Powell asked him why he committed the murder, and he replied,

- "For fun."
- "Don't you know they hang folks for such fun?" asked the officer.
- "Yes, they hang 'em, and I reckon the police will hang me, and do it well."

To Justice Barry, Reeves said God told him to kill Father Ashley. He was the best friend he ever had, and he killed him to save him. He said further that if he was hung and died easy it would be easy, but if he died hard he'd come back and make everybody in the world his slave.

- "What made you kill the Father?" asked Mr. Powell.
- "God told me to do it, and I wanted him to die before I did, anyhow," replied Reeves, in a confidential sort of way, adding: "You see, I'm going to die pretty soon, and I wanted Father Ashfield to go on ahead and fix things for me."
 - "Are you a Catholic?" he demanded suddenly.
- "Yes," replied the officer, avoiding the truth to note the effect on the lunatic.

"Well, if you are, you ought to know why I killed him," said Reeves. "All the Irish Catholics know it, and they'd like to see me hung."

Scarce a day passes but some sad experience like that above detailed, proceeds from the amateur management of mania, the mistakes of a maudlin philanthropy, or unavoidable contact with lunatics at large who ought to be under lawful surveillance or confinement.

We have in our possession data of diabolical outrages and fiend-like acts perpetrated by insane persons out of asylums and of self-inflicted wounds and destruction of property, neglect and exposure by the same, sufficient to make a volume of horrors and wrongs, and might have been and should have been, averted by judicious and

timely watchfulness and restraint.

If the murders and rapes and arsons, and nameless and unnameable diabolisms daily chronicled in the public press are to go on much longer, then the humanitarianism of Tuke, Chiarugi, Shaftesbury and Pinel were a failure. The suicides of the insane are the least revolting of the consequences of their liberty, for when a lunatic dies a fountain source of harmful neuropathics may be cut off. But when a lunatic, at liberty, slays a trusting wife, confiding husband or innocent child, burns the home that shelters him or blasts the life and good name of family or friends, they that ought not to suffer, demand our succor; their blood and their wrongs call for the enforcement of the lunatic's right to timely judicious restraint and treatment under suitable surveillance rather than for the popular habeas corpus.

It were far better that all the lunatics of the land languished even in the chains which the age has unshackled, than that the present carnival of insane crime

go on.

We concede the lunatic's right to liberty, but to that liberty which he found when the shackles were stricken from him in the dungeon cells of Bicêtre; the liberty of hospital life and medical surveillance only; the liberty to go wherever and so far only as it is safe to the community under expert medical judgment for his morbid mind to wander. Thus far and no further, and the past year's record of horrors caused by lunatics at liberty who ought to have been restrained furnishes the appalling proof.

Some years ago Foster Pratt, of Kalamazoo, wrote a convincing paper on the risks and dangers of insanity, if we recall aright the caption, and the risks and dangers of

the insane out of the asylums, both to themselves and to the community is a subject as worthy of philanthropists' and legislators' attention as that of their proper treat-

ment in the institutions for their care.

The asylum is *prima facia* the place for the lunatic, and the *habeas corpus* had better be employed, as a rule, to take him from society to the place of treatment which is his due and his right, than to take him from the hospital to the society of the sane world outside, which has distorted and distracted his mind and which his distracted mind is likely to prey upon to the harm of both himself and society.

This is not sentiment but it is, we think, the sense of psychiatric science and it is or will be the final testimony

of experience.

As an alienist of some experience with lunacy at large as well as "behind the bars" we commend the subject to the philanthropically-minded interested in the proper care of the insane.

Mild Mind Maniacs.—The miracles of the Divine Master healer of the bodies and souls of men are being made, in these latter days, the false basis of an hallucinatory healing craze, in which both doctor and patient are deluded even unto death. Forgetful of the fact that Christ died of an undoubted physical disease, induced by direct and indisputable physical—even mechanical—causes, these mind-cure cranks persist in specializing the miracles of the Saviour into a rule of faith and practice for us unhallowed mortals, which at their bidding is to set at naught the irrevocable laws of nature, and give us new and unnatural relations of mind and organism, in the management of dissolutive disease.

They propose to induce the insolvent organism to continue in business by persuading it that it is still solvent. This principle of confidence and hope works well in some cases, as it does in some instances of impending business failure, but not in all. The true physician, like the true friend, should in any crisis, offer more substantial aid along with the psychical manage-

ment-a substantial basis with the hope.

The Mrs. Eddys and kindred mind-curers, are doing a deal of harm by ignoring the physical causes and cures of disease; and then, like the mistaken mind-curer, a memorial of whose misguided and fatal career here follows,

have done much harm, and these illustrations of the blotupon the brain of modern life, which paralyze rational effort like an apoplexia, often leading to insanity and death are unfortunately increasing in number.

From the Hartford Times of recent date we extract the following sad record of this modern popular delu-

sion:

Dr. J. W. Cowdrey, a Christian Scientist of this city, was stricken with apoplexy, at West Haven, on Thursday evening, and died Sunday evening. He was in the act of delivering a parlor lecture on the faithcure, to a number of persons gathered at the residence of Nathan Hale, when he suddenly became unconscious, and although all the remedies of his school were tried he failed to rally. Dr. Shepherd was called in the following day, but Dr. Cowdrey was beyond human belp and died Sunday evening.

* * * * * * * *

There were circumstances of peculiar interest attending the sudden Mrs. Hale, at whose home Dr. Cowdrey's tragic death illness and death. occurred, has been an invalid for many years. Some say that much of her trouble was imaginary, but, be that as it may, she was for a long time under medical treatment. Less than a year ago she decided to try the faith-cure and went to Middletown, where she remained for some time under that kind of treatment. She returned to West Haven apparently improved, and so thoroughly reliant on the faith cure in the treatment of bodily ailments, that she decided to embark as a mind-cure physician herself. Quite a number of West Haven people gradually came to believe in her treatment, and there are some who believe themselves to have been really cured of illness by her, although sceptics were found who insinuated that there never was anything the matter with these people. At all events Mrs. Hale succeeded in building up quite a practice, although she was not always successful with her patients.

About two months ago her health broke down under the strain of her professional duties, and she went to Middletown again to recuperate. She remained there for a time, and then came to Hartford, where she placed herself under the care of Dr. Cowdrey, who was regarded as one

of the leading mind-cure exponents of the State.

Mrs. Hale remained in this city until last Thursday, when she returned home, accompanied by Dr. Cowdrey. The announcement of the latter's visit had been made to Mr. Hale beforehand, and the latter invited quite a number of West Haven people to meet Dr. Cowdrey at his house, and listen to a paper lecture on "Christian Science." Quite a number of persons responded to the invitations, and there were both believers and sceptics in the audience which greeted Dr. Cowdrey. He began his lecture, and in reading from his manuscript had just made the statement, "Christian Science can defy death," when he was suddenly seized with what his auditors believed to be a fainting spell. It was proposed that he should lie down on the sofa, but he retired to a room directly above, where he fell unconscious to the floor. No physician was summoned

until 11 o'clock the next day, when, all faith remedies failing, Dr. Shepherd was called in.

Mrs. Hale went back to Middletown again last night, the shock of Dr. Cowdrey's death having caused a relapse.

Dr. Cowdrey was 54 years old, and was one of the first graduates of the law school of the University of Michigan. He adopted the mind-cure profession three years ago, and opened an office in this city, where he had quite an extensive practice.

Call the next witness to the infallibility of Christian healing science.

There can be no doubt but the neuro-psychic tone of hope inspired and faith assured, improve molecular activity and exert alterative influences of no little value in turning the tide toward recovery, in functional diseases especially, and often in organic trouble dependent upon neuro-functional states, as in changes due to vaso-motor conditions. Mental influence has long been recognized as a potent therapeutic influence and an essential factor to retard, depress or promote recovery, and the Christian hope and faith are not to be despised, nor the "power of Christ unto salvation," even from bodily ills, to be ignored as most potent. But to make it the all-in-all, to the ignoring of the methods of nature and science, which like affliction are likewise from God, converts faith into fanaticism and divorces it from works, and thereby kills instead of cures, for "faith without works," we have divine warrant for saying, "is dead." The laws of nature are the laws of nature's God, and he who honestly appeals to and applies them, utters and acts the truest and most devout prayer for the Divine aid. To seek through faith only to be healed, is a specializing of the gifts of God not warranted in Holy Writ. It is asking to have the thirst quenched without water, the body nourished without food; for both food and drink are God's own essentials to bodily existence, without which God has never yet permitted mortals to endure. Yet hope and faith are alterative and tonic. Inspired and kept active, they may and do change and promote molecular activities which, in certain states of disease, stimulate and favor recovery.

Cures do follow the invocation of the Christian Scientist, as they follow the mandate of the hypnotizer and confident assurance of the charlatan. To this extent, no more, is there healing power in Christian Science, so-called,

and the mind-cure.

Dissolution and death come too, in spite of the strongest faith inspired, as in the startling example above cited; in spite of the confident assertion of the new school of modern incantation, whose votaries are but civilized Voodoos. The amulet about the neck, the buckeye and potato in the pocket, the gipsy charm, the caldron's concoction, and the Chinese doctors' conglomerate, likewise cure by faith, and pilgrimages to holy shrines and to unholy places also. But the miracles of the latter are wrought through changed environments and change of air, as well as the new psychical surroundings of the patient, that exerts new mental influence and inspires hopes anew and new hopes of cure.

Multiple Peripheral Neuritis, as it has been termed, or polyneuritis, as Mills and Lloyd in their valuable article in "Sajou's Annual" have termed it, has come quite prominently to the surface of professional thought and observation within the past few years. It is now but a little over forty years since that remarkable Irish physician, Graves, first discovered in the hospitals of Paris this interesting neuropathic condition, which till then had escaped the observation of the medical savants of the French capital. Its literature has since then accumulated to a vast volume of well-made observations and accurate deductions, not the least valuable of which are the recent elaborately written and entertaining papers of Drs. Chas. K. Mills, Jas. Hendrie Lloyd and M. Allan Starr.

Peripheral neuritides from toxic cause, not to mention the common forms of autotoxic disease, like syphilitic, rheumatic, gouty, etc., together with malarial, phthisical, the neuritis of beri-beri and spontaneous neuritides, have been especially well studied. The neuritis of plumbism, ergotism, cupral and arsenical poisoning have received much attention; but the most satisfactory light seems to have been shed on alcoholic multiple neuritis, both by clinical observation and autopsic investigation, probably because this agent, by its common use, is most fruitful in patho-

logical subjects.

Biggs, of New York ("Sajou's Annual," 1888), presented to the New York Neurological Society, in 1887, the cord and nerves from a case of alcoholic polyneuritis, which showed, with slight sclerosis of the columns of Goll in the cervical region and normal nerve roots, one of the sacral nerve roots before its exit from the spinal canal increased in its

endo-neuriam, with irregularity, indistinctness and diminution in number of the nerve fibers; the same, but more marked changes, in the right sciatic; the posterior tibial even more advanced, and with only an occasional nerve fiber detectable.

The gastric nerve was composed almost entirey of adipose tissue; only here and there an atrophied muscle fiber was found. The small nerve trunks in the muscle showed advanced degenerative neuritis, with comparatively little new growth of connective tissue in the nerves.

By far the greatest benefit from the activity in the study of peripheral polyneuritis is in the differential diagnostic aid it has given us with reference to locomotor ataxia, some of these cases in past years, in our own experience and doubtless in the experience of other neurologists, having been mistaken and misinterpreted, notably those from a combined alcoholic, syphilitic and rheumatic cause.

Before us is an interesting clinical study of alcoholic neuritis, by Dr. Frank R. Fry, which, in part at least, illustrates this point:

A CLINICAL STUDY OF ALCOHOLIC NEURITIS (St. Louis Courier of Medicine, November, 1888.)-Mrs. C. B., æt. 26, housewife, first seen January 9, 1888. Temperature 102.5° F, the pulse and respirations correspondingly increased. She lay in a condition of semi-stupor, mind wandering, only answering questions and conversing when aroused. Contents of bladder and bowels passing involuntarily and frequently; complained of much pain when her lower limbs were handled or moved; apparently, complete paraplegia; all the extensors of the upper extremities paralyzed; wristdrop, both sides; slight power in flexors of fingers; no knee-jerk. On account of her condition tests of sensation unreliable; slight pressure on the muscles, especially of the calves, caused much complaint, and would quickly rouse her from deep sleep. Condition remained about the same for ten days, then temperature fell; she took nourishment freely, mind brighter but bad memory, especially for recent occurrences, and occasional delusions. After improvement, found impairment or loss of temperature and tactile sensibility from the toes to waist line, and impairment of the same to less extent in hands and fore-arms; a rapid atrophy of the muscles of the lower extremities, less of the upper; did not gain full control of the sphincters for some weeks.

History: About two weeks before the date when first seen, she had gone to a wedding on a very cold day, remaining all the afternoon and most of the night. Going and returning, and all the evening, she was very chilly—could not get warm. The following morning when she awoke, found herself strangely helpless in trying to turn over in bed. On attempting to get onto her feet, she was barely able to stand. From that time

there was a steady increase in the numbness and paralysis. The patient and her husband denied that she used much alcohol. The attending physician had told me on our way to visit her that she did. A relative afterwards confirmed this statement. The patient finally admitted that she drank beer and whiskey all the time, A note made March 25 shows that there was then evidence of rapid improvement, which was uninterrupted until she was well. A note made February 15, some five weeks after our first visit, shows that there was at that time a reaction of degeneration (of greater or less extent) of most of the muscles of all extremities. The dorsal and palmar interessei of both hands reacted normally to the current. Her hands were very thin and flexible, on which account it was possible to demonstrate the action of these small muscles very perfectly, making an unusually interesting spectacle. I last saw the patient August 15, 1888. She is perfectly well, so far as she can tell, in all respects. Only after a long walk or standing on her feet all day does she experience any uncomfortableness, and that in the way of a weak feeling in the ankles. Sensation is good. The knee-jerk is absent (or so nearly so that I cannot get it by the ordinary methods of testing, with reinforcements). The treatment consisted of large doses of ergot and iodide of potassium at first, and later of nux vomica.

In this case alcohol was probably the predisposing cause and exposure to cold the exciting cause.

Tests for Morphia in the Urine.—A subscriber to the Alienist and Neurologist writes:

If you could publish in the next number of your Journal some plain and practical method for the detection of opium or morphia in the urine I think it will be appreciated by the profession. I have just finished an attempt to detect morphia in the urine of a lady who has just come to me from the South for treatment of the opium habit, and while knowing it was there, as she was taking five grains daily, I could not detect it by the test which Jennings recommends, viz., I 10, KI 20, aqua 500 parts.

I shall, for one, be greatly obliged for any information on the subject,

which is certainly of great practical value.

Dr. Oscar Jennings, of Paris, who first suggested urinary analysis of suspected opium eaters, employed the following methods, which were given in the *Review of*

Narcotic Inebriety for January, 1888:

(1.) The double iodide of mercury and potassium (HgCl 13,546. KI 49.80, H2O to a quart) This gives a yellowish white precipitate with the alkaloids. (2.) The iodized iodide of potash (I 10, KI 20, H2O 500), the precipitate from which, in the presence of morphia-salts is brown or yellowish. If the quantity be too small to discover by one of these re-agents, boil the urine to a third, treat with tartaric acid, then dissolve the tartrate of mor-

with ammonia, and if morphia be present, the solution should show a blue color on adding the perchloride of iron. A slightly less troublesome proceeding will detect meconic acid and prove the taking of opium; evaporate, wash with acohol and boiling water, neutralize with magnesium carbonate, and treat, after filtration, with solution of iron perchloride. A blood-red color is characteristic of meconic acid.

In December, 1887, the British Medical Journal gave the following test: To the solution to be tested add a few drops of strong sulphuric acid and about the same quantity of a solution of sulphate of sodium. Heat the mixture in a porcelain capsule and directly it begins to give off sulphuric vapor cool it suddenly, when it assumes (if morphine be present) an intense violet coloration. If the mixture be further heated, it turns brown, and when cooled the addition of a few drops of water determines a vivid red coloration, which turns a pale green if more water be added. If at this stage an equal bulk of chloroform be poured into the mixture and well shaken, the chloroform becomes of a bright blue color.

Surgeon Warren Webster, U. S. Army.—By direction of the President, this officer was placed on the retired list of the U. S. army, February 28, 1889, on account of disability. We regret to know that Dr. Webster is permanently incapacitated for active service, and that thereby the army is deprived of his continued valuable services. It is with pleasure that we reproduce from the sixth volume of "Cyclopedia of American Biography," lately issued from the press of Messrs. Appleton & Co., New York, the following biographical notice of this Government medical officer. We remember a pleasant visit to Dr. Webster at his army home on the northern coast of Maine some years ago, and cherish the recollection of his cordial hospitality with much pleasure:

Webster, Warren, surgeon, born in Gilmanton, N. H., 7 March, 1835. He was educated in New Hampshire and at medical schools in Boston and Paris, and graduated at the Medical Department of Harvard in 1860. Dr. Webster was appointed assistant-surgeon in the U. S. army, 23 June, 1860, and after brief service on the frontier was ordered to Washington, where in 1861 he was placed in charge of Douglas General Hospital, at the same time engaging in the organization and superintending the construction of other permanent military hospitals at Washington. He was on duty on

the field at the second battle of Bull Run, and was made a medical inspector in the Army of the Potomac in 1862. Dr. Webster was present in the battle of Fredericksburg; and active in the care of the wounded after Chancellorsville (1863), where he organized numerous field hospitals, passing to and fro for the purpose between the opposing lines under flag of truce. He was in charge of McDougall General Hospital, Ft. Schuyler, N. Y., in 1863-'4 and then of DeCamp General Hospital, where, in 1866, during the cholera epidemic, he greatly distinguished himself. He was promoted surgeon with rank of major, 28 July, 1866, was medical director of the 5th military district in 1868-'70, when he organized a quarantine system for the Texas coast, and afterward served at various military stations in California and the East. Dr. Webster was brevetted captain "for gallant and meritorious services in the battle of Chancellorsville, Va.;" major, "for faithful and meritorious services during the war;" and lieutenant-colonel, "for meritorious and distinguished services at Hart's Island and David's Island, New York Harbor, where cholera prevailed." He is the author of "The Army Medical Staff" (Boston, 1865); "Regulations for the Government of DeCamp General Hospital" (New York, 1865); "Quarantine Regulations, 5th Military District" (Austin, Tex., 1869); and "Sympathetic Diseases of the Eye," translated (New York, 1881).

Latent Symptoms in Cerebellar Disease.— A recent discussion before the New York Neurological Society on a clinical case of tumor of the pons presented by Dr. M. P. Jacoby, in which Dr. W. A. Hammond referred to a number of cases of tumor of the cerebellum as germane, calls to mind what Dr. Allen McLane Hamilton says introductory to the subject, of the morbid anatomy of cerebellar disease, viz., "The results of much experimentation show that injury or disease of the cerebellum is followed not only by special symptoms but by others, indicating disturbance of the conjoined function of the cerebrum and cord." The fact is that cerebellar symptoms may be rendered quite nil under judicious treatment addressed to the vaso-motor mechanism and the maintenance of the vascular equilibrium within the cerebrum, mesocephalon and pons, especially where but one hemisphere of the cerebellum is only incomple ely implicated. and this is emphasized in the conclusion of the interesting article in this number of the Alienist and Neurologist by Dr. G. Seppilli.

The characteristic inco-ordination without paralysis, the vertigo and the occipital, occipito-frontal or diffused encephalic pain may all be made to disappear for a time under galvanism, bromides and other vaso-motor restraint and regulative treatment, as was the result with a case

recorded by the editor of this JOURNAL in 1877. We are quite prepared therefore, for accepting the doctrine promulgated in the interesting article of Dr. G. Seppilli, that cerebellar symptoms, affecting one lobe are sometimes quite latent. They are so or may become so under judicious treatment, even when death is impending as a final issue and even rupture of the brain. The symptoms of cerebellar disease are largely cerebral, especially in unilateral cerebellar trouble, because the circulatory apparatus of the brain is generally conjointly implicated, and the cerebrum is secondarily and sympathetically involved. From this fact the proper therapeutic proceedings are quite obvious. And the same is largely true of pons affections.

Muscle Beating Massage.—When nutrition of the voluntary muscles fails from inaction resulting from the cessation of willed impulses from the psycho-motor areas of the brain or from impaired motor conduction from any cause, as in general neuratrophia and its natural symptomatic expression, neurasthenia, we may find it advisable to resort to a substitute for voluntary exercise.

Neurology meets the indications by massage, manual, mechanical and electrical, as with the Swedish movement cure, Faradism, Franklinism, etc. To meet this indication in the treatment of disease Mr. John E. Ruebsam has devised a muscle beating apparatus so simple of construction and easily used as to merit professional commendation.

It consists of india-rubber tubes or balls, so arranged on elastic sticks as to simulate more or less closely the hand as employed in the beating movements of massage. By their use circulation and muscular nutrition are improved without bruising or pain. For the maintenance of nutrition in paralyzed limbs, for the warming of cold feet and other portions of the body which suffer from lack of circulation, for the stimulation of muscles affected with chronic rheumatism, as in chronic lumbagoes, they are serviceable. We really take pleasure in recommending these "Muscle Beaters" to our readers, for we believe they will derive much benefit from their use.

Chloral Insanity.—The London Lancet contains the following record and comments:

Mark Robinson, a lad of eighteen years of age, who had some few

months since begun a promising career in London, shot himself in a public cab. The most searching scrutiny has failed to assign any cause for the act, but the medical history is interesting and instructive. Gauged by the commercial standard, the boy was a valuable clerk, and a few days before his death had been promised promotion. From a medical point of view he was neurotic, and recently removed from school-boy sports to the surroundings of city life, he became neuralgic. In ignorance of the baneful effects of chloral he drifted into its incautious use, and on the night before his death appears to have taken five doses. He was found on his bedroom floor in the morning so deeply narcotized that a medical man was called to see him. Both the latter and the boy's father were thankful for the disclosure, and were sanguine that the evil had been recognized in time. But soon afterward, and while he was still unable to dress himself without assistance, he was summoned by telegram to attend at his office. Ill and quite unfit he went thither in a cab. What ideas must have passed through his mind during that arduous dressing and journey may be learned from the sequel, for when his employer pronounced him incapable of signing a legal document as witness, and sent him home, he shot himself on the way with a revolver which had hung in his brother's room at his lodgings. An indolent, phlegmatic or dissipated lad would have made no such history. But he was industrious, a teetotaler, and free from vice. To him chloral had no suggestion of vice, but it robbed him of his reasoning power and gave rein to an overwhelming idea of duty. How many such deaths will occur before the Government places restrictions upon the sale of chloral which will make its dangers obvious?

The Value of Sulphonal in the Insomnia of the Psychoses, though just now lauded by our German confreres and much employed by them, is not in our opinion the equal of chloral, especially if judiciously combined with a suitable bromide salt, like the bromide of ammonium or potassium. Occasionally a patient has returned to us after a trip abroad, and the almost invariable sulphonal prescription in case insomnia followed them there or overtook them while in Germany, and we have been better satisfied with the more complete night's rest and next day's mental tranquility and refreshment that followed the chloral than with that which succeeded the sulphonal. Nevertheless Dr. A. Cramer (Berlin Klin. Wochenschr., 1888, No. 34,) has made experiments in his asylum on forty-five different patients suffering from melancholia, mania, paralysis, paranoi a and hebephrenia, in all four hundred and seven experiments. In 92 per cent. sulphonal produced a sleep lasting five hours or longer; it came on in from one-quarter to one hour after the medicine was administered. The dose varied from 30 to 90 grains. The remedy appeared to

act harmlessly and drowsiness did not persist long, save in exceptional instances after the patient awakened. The medicine was given at night, usually the most proper time, we may here remark, for the giving of a hypnotic draught.

Metalo-Psycho-Therapy or its equivalent influence through the imagination is illustrated in the remarkable recoveries attributed, in China, to a prescription in which is blended rubies, pearls, corals, emeralds and various earths made into a mass with gum acacia, tragacanth, etc. and aqua rosæ, then divided into gold-coated pills and administered pro re nata.

This miraculous metalo-therapeutic compound is according to Chambers' Journal, reported to be an infallible cure for small-pox, measles, scarlet fever, and all diseases which arise from blood-poisoning and break out in cutaneous eruptions. The strengthening properties of the preparation are said to be quite remarkable. The Jesuits, who flourished in China in the early part of the present imperial dynasty, affirm that they have seen men snatched from the last convulsions of death by its judicious use.

The difference between the Chinese mind cure business and the modern American craze is mainly in the fact that in China the patient takes the doctor's gold with something else substantial and valuable, while here the doctor takes the gold from the patient and gives nothing in

return.

The Place for the Chronic Inebriate.-All readers of the ALIENIST AND NEUROLOGIST will concur in the view recently expressed by Dr. L. W. Baker respecting the proper place for these unfortunates. The same views have been expressed "many a time and oft" before by humane physicians, chief and first among them in this country having been Dr. Benjamin Rush, who, strange to say, has yet no monument to his memory, but the subject will bear repeating till State and people see it in its true light and do justice to these unfortunates.

"Instead of sending the chronic inebriate to the penitentiary, he should committed to the inebriate hospital, properly arranged for this special purpose. The hospital should have legal powers of detention and control similar to those of our best asylums for the insane. It should be located on a large farm, away from the cities, and should be supplied with various industrial appliances for the occupation of the patient, and in charge of physicians who have made special study of the care and treatment of inebriates. If we humanely provide asylums for the chronic and helpless-cases of insanity, why refuse similar provisions for the incurable inebriate? Both classes need asylum care if for no other reason than to prevent the transmission of the insane and inebriate diathesis to succeeding generations."

Galileo the Inventor of the Microscope —Notwithstanding the counter claims to this discovery of another man and another country it now appears that Italy and Galileo are entitled to this distinguished honor.

M. Govi, an Italian savant, has presented a paper to the French academy of Sciences, in which he claims for Galileo the distinction of having discovered the microscope as well as the telescope. He has found a book printed in 1610, according to which Galileo had already directed his tube fitted with lenses to the observation of small near objects. The philosopher himself stated, shortly after this date, that he had been able to observe through a lens the movements of minute animals and their organs of sense. In a letter, written in 1614 to a Sig. Tarde, he states that he has with his microscope "seen and observed flies as large as sheep, and how their bodies are covered with hairs, and they have sharp claws."

The London Times is our authority for the above statement, and Cornelius Droebbel, the Dutch discoverer in 1621 of the little gnat instrument of the grand revelations and revolution of modern science, must take his place in the march of discovery and progress eleven years behind the great Italian.

An Apparently Sane Motive for a Seemingly Sane Act to Avoid Insanity.—Suicide of Professor Soyka.—Professor Soyka shot himself through the head at his home in Prague, on the 23rd ult. Professors Gussenbauer, Kahler and Pick were immediately summoned and found the doctor dying. He had suffered from extreme nervous irritability and exhaustion from the shock of his brother's death—a distinguished lawyer, who died in a Vienna lunatic asylum last year. The professor left a slip of paper on which was written the following words: "Dear Brother, I follow you. Where thinking ceases shooting begins. It is better to die than to go mad."

This looks like sane conduct under stress of nervous shock, to avoid its extreme consequences in apparently

approaching mental abberration.

The "Alienist and Neurologist" and Longevity.

—About ten years ago, a gentleman who has passed

far beyond the alloted span of three-score years and ten of life, sent us a check for ten years' subscription, saying his race would be run before its expiration, and requested the balance to go to the good cause. That subscriber still lives a hearty octogenarian, almost a nonogenarian, and we hope soon to receive from him another subscription.

MORAL: Subscribe ten years to the ALIENIST AND NEUROLOGIST. Try the decade plan as a promoter of longevity. Even the annual subscription plan seems to have worked well as a promoter of longevity, for the ALIENIST AND NEUROLOGIST has about a score of octogenarian subscribers who have taken it from its birth

regularly.

The Weight Lifted from the Cord in Tabes Dorsalis.—In lieu of absolute rest for tabetics, Charcot, in a recent clinical lecture endorses and gives emphasis to the Russian plan of suspending the patient for a few moments daily as in preparing for the application of the plaster jacket for Pott's disease of the spine. Good results have followed the new therapeutic procedure, such as the diminution of the frequent pains, the return of the tendon reflex and the re-awakening of the dormant sexual powers. The rationale of this is something like the recumbent plan of treatment. Its a sort of cord-stretching procedure, by taking the weight for a time off the intervertebral cartilages and the sciatics, too, are probably slightly stretched by the procedure.

Poliomyelitis Anterior is in danger of going the way of tetanus and taking its place among the parasitic infectious diseases if Pierrot's and Mathi's views are tenable.

The former finds perivascular exudation as in syphilis, small-pox, etc., in connection with the cornual myelitis, and the latter claims to have found the microbe of infan-

tile paralysis or its equivalent in the lower animals.

The period of incubation of poliomyelitis anterior infantilis is so brief in many cases, and the absence of well-authenticated epidemics of this disease militates against the implicit acceptance of this view of its exclusive causation, notwithstanding the record of some simultaneous cases recently reported in France.

Long-Looked for, Come at Last.—Gum Chewers' Paralysis.—The newspapers have recently chronicled the case of a young lady living near Harrisburg, Pennsylvania, who has been stricken with facial paralysis from the excessive use of her lower jaw in masticating chewing gum.

It is strange that the tongues of the dear creatures so persistently escape paralytic trouble. This organ seldom

gives out in the sex.

The Attica Sleeper, Mrs. Emma Althouse, had fallen into another somnolent trance when last heard from, April 15th, and had been asleep nineteen days. We should be glad to receive an authentic account of this case from some reputable physician of the vicinity.

Dr. John N. King has been elected to the chair of Diseases of Women and Children, Beaumont Hospital Medical College.

Superintendents of American Hospitals for the Insane.—The next Annual Meeting of the Association of Medical Superintendents of American Institutions for the Insane has been changed from Chicago to Newport, R. I., June 18th, 1889

Drs. Cowles, Curwen, Fisher, Gorton and Channing have been appointed a Committee of Arrangements, the

last named being secretary.

The American Neurological Association has decided that the Fifteenth Annual Meeting of the Association will be held at the West End Hotel, Long Branch, New Jersey, on Wednesday, Thursday and Friday, June 26th, 27th and 28th.

There will be two daily sessions, one at 10.30 A. M.,

the other at 3.30 P. M.

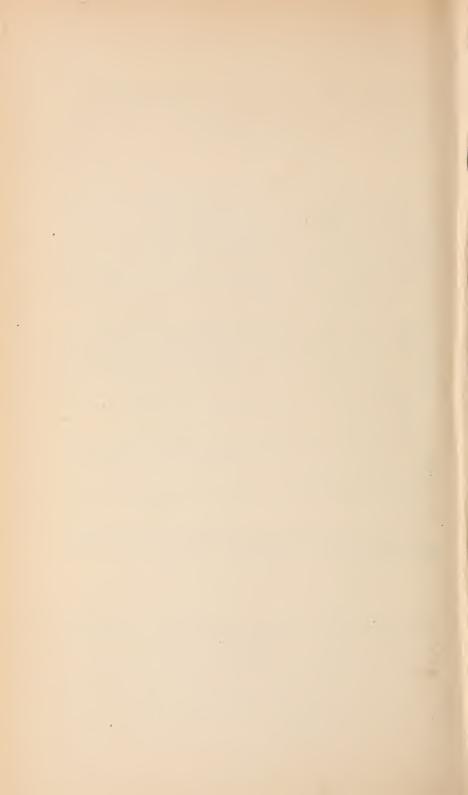
You are earnestly requested by the Council to contribute to the success of the meeting by the presentation of a written communication, pathological specimens, or microscopical specimens.

The secretary calls your attention to Art. IV. of the

By Laws:

ART. IV. The titles of all papers to be read at any annual meeting must be forwarded to the corresponding secretary not later than three weeks before the first day of the session.

These notices were inadvertently omitted from the Editorial pages.



Reviews, Book Notices, &c.

Ivrognerie ses Causes et son Traitement. Par P. J. Kovalevsky, M. D., Professeur des maladies mentales et nerveuses a l'Université de Kharkoff, etc. Kharkoff, Russia, 1889.

This is Russia's most recent (and so far as we know only) contribution to the study of inebriety, stimulated by the impulse given to the subject by the work done in the same direction in America, as is evidenced by the copious references to prominent American writers, most of whose work has become quite familiar to our readers through contributions to the ALIENIST AND NEUROLOGIST.

The following is the author's method, by sub-heads, of treating his subject:

- "Symptômes de l'ivrognerie.
- " Période prodromale de l'ivrognerie
- " Alcoholisme chronique.
- "Dypsomanie.
- "Causes prédisposantes de l'ivrognerie.
- "Causes provocatrices de l'ivrognerie.
- " Traitement de l'ivrognerie."

Following is a fair analysis of the author's views and inferences, which will serve to show that the distinguished professor of Kharkoff is fully en rapport with the denizens of warmer climes, in his estimate of the neuropathological states, antecedents and sequences of inebriety and kindred morbid conditions.

The author regards inebriety as entitled to the same consideration as a nervous affection, as pneumonia or cholera, and expresses his surprise at the ignorance of the general public of this simple and evident view. He maintains that it is a curable disease.

Following is a summary of the work:

Nearly all scientists consider inebriety an inherited disease, having its etiology, its evolution and its therapeutic particulars. Crother's (ALIENIST AND NEUROLOGIST, 1885) and Mann (Quarterly Journal of Inebriety, 1885,) admit two periods in the evolution of inebriety; the nervous or premonitory, and the second or dipsomania; the latter only curable in its first stage.

While intoxication is not a disease, but simply a state of an abnormal condition from which a man can recover, inebriety, according to Kerr, is a constitutional nervous disease, characterized by an irresistible tendency for alcoholic drinks.

The first stage of inebriety presents symptoms of a constitutional nervous state, inherited or acquired, and manifests itself by the loss of equilibrium and irritability of the nervous system, as well as by the weakening of the brain and inability of controlling the impulses and

reflexions, these in general are but the symptoms of "neurasthénie," which is very favorable to the development of the alcoholic habit.

What characterizes the "neurasthénie alcoholique" is the instinctive need of the diseased for an artificial stimulant; the irresistible tendency to satisfy it. The alcohol becomes finally an indispensable means for the maintenance of his strength and activity, and that which was first a temporary resource, becomes a permanent necessity—an organic need—which has to be satisfied at any cost.

Among the symptoms of neurasthénie alcoolique, Crothers has observed a very peculiar one. He affirms that the children of inebriate parents are weak-minded and can present symptoms of "l'alcoolisme aigu" without ever having taken any liquor, This state of inebriety without alcohol since birth, is correlated with imbecility and idiocy; but can also appear in mature life, which the following observation of Crothers illustrates:

A banker, who was on the train at the moment of an accident, experienced such a moral shock that he was put into a state of complete inebriety; his movements, gestures, and way of speaking fully representing it. This state lasted several hours and then disappeared voluntarily. This banker had never been addicted to drink, but was born of inebriate parents.

It is necessary to distinguish between delirium tremens, epilepsy, and the alcoholic mania, which are the result of prolonged intoxication by alcohol, and inebriety in the stricter sense. The morbid states mentioned are but consecutive to chronic intoxication by alcohol, while on the contrary, inebriety or the irresistible need to take alcohol, is an inherited disease. A prolonged or chronic alcoholism, causes imbecility and paralysis; the passions, not conscience and reason, governing the drinker.

Periodic Inebriety—Dipsomania.—Alcohol in this case is to satisfy a morbid impulse, and stands in double relation to chronic alcoholism. It can be transformed into chronic alcoholism, as the latter can be transformed into dipsomania.

To the group of predisposing causes of inebriety belong all the conditions which act debilitatingly upon the organism, and obliging the diseased to seek stimulants in intoxicating drinks. In the majority of cases these causes by themselves produce not yet inebriety, but if physical and moral influences are added, then inebriety—disease appears. The predisposing causes can exercise this destruction upon the organism at all periods of life, and are divided into predisposing pre-natal causes and predisposing post-natal causes.

Predisposing pre-natal causes constitute heredity in the large sense of the word. This hereditary influence of inebriety has been known for ages (Plutarc). Hereditary inebriety is, according to Dodge and Kerr, 50 per cent., according to Mason 60 per cent., and to Parrish and Magnan 80 per cent.

Heredity of alcoholism can be homogene or heterogene (Lentz). The former consists in transmitting to children the vice of drunkenness; in the latter parents transmit to their issue not drunkenness—the vice, but

inebriety—the disease. In the latter case one observes a diminution of the sensibility and the most variegated nervous troubles.

Inebriety predominates in the masculine sex, and is, according to English and American statistics, 5.1, and is found most between 25—45 years, the most from 30—40.

The climate of England, gloomy and damp, predisposes to alcoholism, while the serene sky of Italy is less favorable to this evil.

Drunkenness is found mostly in America and England, less in Russia, France and Germany, least in Italy. It is rare among the Indians, but extremely frequent among the black races and in Sweden.

According to Crothers 40 per cent. of the origin of inebriety is postnatal, and of this number 25 per cent. where the etiologic causes are constituted of somatic diseases, physical shocks, etc. 10 per cent. of the cases are the consequence of exterior circumstances, and 50 per cent. of the causes of inebriety are not yet known by science.

To the group of etiological post-natal causes belong: sex, age, religion, nationality, climate, education, profession, fortune, conditions of family and somatic diseases. To the provocating causes belong: "Traumatisme psychique"—nervous shock—or physique, narcotic substances and moral contagion.

For the treatment of inebriety Kovalevsky recommends the Gothenburg system applied in Sweden, temperance societies, institutions for the diseased, treatment by electricity, the meat and vegetable dieting having been unsuccessful.

THE PSYCHIC LIFE OF MICRO-ORGANISMS. A study in experimental Psychology. By Alfred Binet. Translated from the French by Thomas McCormack. With a preface by the author, written especially for the American edition. Published by the Open Court Publishing Co., 169-175 LaSalle Street, Chicago. Price 75 cents.

Our first impression upon reading the caption of this book was that the author was proposing to bring psychology down to an exceedingly fine point, but a critical examination of the work reveals not only a satisfactory raison d'etre, but an ample justification for the title and reward for the author's researches.

The following extracts from this interesting book will fully sustain the above statement, besides being of special interest to microscopists:

The Hunter Animalcules.—In a large number of animalcules the prehension of food is preceded by another stage, the search for food, and in the case of living prey, by its capture. We shall not investigate these phenomena among all the Protozoa, but shall direct our attention especially to the ciliated infusoria. Their habits are a remarkable study. If a drop of water containing Infusoria be placed under the microscope, organisms are seen swimming rapidly about and traversing the liquid medium in which they are, in every direction. Their movements are not simple; the infusory guides itself while swimming about; it avoids obstacles; often it undertakes to force them aside; its movements seem to be designed to effect an end, which in most instances is the search for food; it approaches certain particles suspended in the liquid, it feels them with its cilia, it goes away and returns, all the while describing

a zigzag course, similar to the paths of captive fish in aquariums; thislatter comparison naturally occurs to the mind. In short, the act of locomotion, as seen in detached Infusoria, exhibits all the marks of voluntary movement.

Fecundation.—"The same desires stir mite and elephant alike."—Montaigne. A remarkable circumstance in this connection is, that the copulation of the spermatozoid and ovule is not without analogy to the copulation of the two animals from which they originated. The spermatozoid and the ovule, to some extent, repeat on a small scale what the two individuals perform in their larger sphere. Thus, it is the spermatozoid, that, in its capacity of male element, goes in quest of the female. It possesses, in view of the journeys it has to make, organs of locomotion that are lacking in the female and are useless to it. The spermatozoid of man, and of a great number of mammifers, is equipped with a long tail, the end of which describes a circular conical movement, which together with its rotation about its axis, determines the forward motion of the spermatozoid.

The spermatic element, in directing itself toward the ovule to be fecundated, is animated by the same sexual instinct that directs the parent organism towards its female.

In the higher animals, the movements of the spermatozoid that is endeavoring to reach the female, exhibit a peculiar character, which it is important to emphasize: these movements do not appear to be directly provoked by an exterior object, as those of micro-organisms are; the spermatozoid endeavors to reach an ovule which is frequently situated a great distance away; this is the case particularly with animals that fecundate internally, with birds and mammifers. A fact that is important to mention in a general way, is the length of road the spermatozoid has totraverse before coming up with the ovule.

Let us now follow the spermatozoid in its journey to the ovule. It is known that the road it has to traverse is, in certain instances, extremely long. Thus, in the hen the oviduct measures 60 centimeters, and in large mammifers the passages have a length of from 25 to 30 centimeters. might ask ourselves how such frail and minute creatures come by a power of locomotion great enough to enable them to traverse so long a path. But observation discloses the fact that they are able to overcome obstacles quite out of proportion to their size. Henle has seen spermatozoids carry along with them masses of crystals ten times larger than themselves, without appreciably lessening their speed. F. A. Pouchet has seen them carry bunches of from eight to ten blood-globules. M. Balbiani has attested the same fact. These globules, which have fastened themselves. about the head of the spermatozoid, have each of them a volume double that of the head. Now, according to Welcker, the weight of a globule of human blood is 0.00008 of a milligramme: allowing that the spermatozoid has the same weight, we may then say that it is able to carry burdens four or five times heavier than itself.

M. Alfred Binet, the collaborator of Ribot and Fréré, and one of the most eminent representatives of the French School of Psychology, has presented in the above work the most important results of recent investi-

gations into the world of Micro-Organisms. The subject is a branch of comparative psychology little known; as the data of this department of natural science lie scattered for the most part in isolated reports and publications, and no attempt has hitherto been made to collate and present them in a systematized form.

Especial use has been made of the investigations of Balbiani, Claparede and Lachmann, Maupas, Ribot, Engelmann, Pouchet, Weber, Pfeffer, Kent, Dujardin, Gruber, Nussbaum, Butschli, Lieberkuhn. The cuts, eighteen in number, are illustrative of the movements, nutrition, digestion, nuclear phenomena, and fecundation of Proto-Organisms.

The most interesting chapters are those on fecundation, which demonstrate the same instincts and vital powers to exist in spermatozoids as are found in animals of higher organization.

M. Binet's researches and conclusions show, "that psychological phenomena begin among the very lowest classes of beings; they are met with in every form of life, from the simplest cell to the most complicated organism." The author contests the theory of the distinguished English scientist, Prof. George J. Romanes, who assigns the first appearance of the various psychical and mental faculties to different stages or periods in the scale of zoölogical development. To M. Binet there is an aggregate of properties which exclusively pertain to living matter, the existence of which is seen in the lowest forms of life as well as in the highest.

LECTURES ON NERVOUS DISEASES, FROM THE STANDPOINT OF CEREBRAL AND SPINAL LOCALIZATION, AND THE LATER METHODS EMPLOYED IN THE DIAGNOSIS AND TREATMENT OF THESE AFFECTIONS. By Ambrose L. Ranney, A. M., M. D., Professor of the Anatomy and Physiology of the Nervous System, in the New York Post-Graduate Medical School and Hospital, etc. F. A. Davis, Publisher, Philadelphia.

He who simplifies a neurological problem in clinical neurology is a benefactor—let his name be blessed. This, the industrious and painstaking author before us has done in numberless instances, both by terse description and apt illustration.

The edition before us is as pictorial as an illustrated primer, and old neurologists, who have passed the a b c stage of their studies, will smile at the coloring and be reminded of the time when they studied their painted alphabet blocks and primary geography, but the busy practitioner who has made but few neurological dissections, will welcome this book as the farmer hails a labor-saving machine.

Ranney roots out the stumps in the way of neurological progress like a pioneer in the field, and will be duly applauded for his pains. He has removed much rubbish, burnt the stubble and cleared the field; in fact has probably made it appear too free of obstacles in some places, but in the main the work meets our approbation.

Much in the present volume is a reiteration of what has appeared in his preceding contributions, but that does not impair its usefulness: on the contrary he has pared and pruned former utterances, and made them more pointed and valuable in their present form.

The book is dedicated to Dr. Geo. T. Stevens, and too much we think is conceded to the views of the latter, as to the oculo-neural source of general functional nervous diseases, especially when we consider that the condition of the muscles of the eye, like that of muscles elsewhere, is dependent upon neural innervation, and that peripheral nerve nutrition is dependent upon central neurotrophic or neuratrophic states; in short, that paralysis of ocular muscles, like muscle failures elsewhere, are, to say the least, quite as often expressions of central, as of purely local states external to the nerve centers.

The author's estimate of electricity as a therapeutic agent is not, in our judgment, greatly overdrawn, though many who read the book will so regard it.

As a treatise on diseases of the nervous system the book is neither so exhaustive as Gowers, Ross, Hammond or Hamilton, nor is it superior, in all respects, to Wood, Wilkes, Arnold or Ross, not to mention Drummond, Erb, Rosenthal, or the classical contributions of Charcot, but it has its distinctive and commendatory features, which render it an indispensable addition to every neurological library, not the least of which, besides its clear illustrations, is the effort the author makes to clear up doubtful points in diagnosis. It is an especially good book for students.

There is one defect, however, which we note with regret; and that is the author's marked partiality for certain American writers, to the exclusion of others.

The following is the scope of the work as put forth in the preface of the book:

The first section treats of those facts (anatomical, physiological and pathological) upon which the science of cerebral and spinal localization of to-day is, of necessity, based.

The second section discusses more completely than most works in this field, the various steps which should be taken by an aspirant in neurology during the clinical examination of a patient; and the deductions which may be drawn from the facts thus elicited. In many instances, authors have given a very incomplete resume of this field, or have omitted it entirely.

The third and fourth sections treat of individual diseases of the brain and spinal cord. Each is discussed from the clinical standpoint indicated in the first section, viz., the *localization* of the lesions described, as well as the recognition of the type which is encountered.

The section which treats of "functional" nervous diseases comprises a full resume of the researches of Dr. George T. Stevens respecting the bearings of "eye-defect" and "eye-strain" upon the causation and cure of these imperfectly understood conditions from the author's standpoint, which is in harmony with the notes of Dr. Stevens.

The author bears strong testimony to the value of the new methods of examination and treatment suggested by Dr. Stevens for these distressing and obstinate maladies. Like other delicate procedures, they can only be intrusted to skillful hands, well versed in their intricacies and careful in regard to minute details. No other treatment has ever yielded him such satisfactory results in severe forms of epilepsy, hysteria, chorea.

neuralgia, headache, insanity, and functional visceral derangements. No drugs were employed by him in many of these cases, and the relief obtained must be attributed solely to the method of treatment referred to.

The final section treats of electricity—an agent which is to-day

invaluable in neuro-therapeutics.

Portions of this work embody extracts from two chapters upon diseases of the brain and spinal cord, in the third edition of the author's treatise on "Surgical Diagnosis." Some other portions have appeared in print from time to time in the periodical literature, while much is here presented for the first time.

RACE AND INSANITY. By H. M. Bannister, M. D., and Ludwig Hektoen, M. D., Kankakee Ills.

This is a carefully prepared statistical study of an important subject, and Dr. Bannister and his associate, at Kankakee, have the industry and ability to give value and interest to their researches, as they have succeeded in doing.

The figures in this paper agree with those of Dr. Spitzka, in showing that it is not the foreign-born in our population that furnish, to any great extent, the cases of general paralysis, and the reason given by Spitzka for this fact, viz., that paretic dementia is a disease of faces of high organization, and that the Anglo-Saxon race, which is of all others the one in which there is the most feverish mental activity, is especially prone to this affection, may be a correct one. Still against this theory, the authors offer "the fact that nowhere in this country is general paralysis as frequent as in some other, lands, whose inhabitants are not generally supposed to be cerebrally more active than our native population."

"Only one nationality shows here a greater percentage than is attributed to it at home—the Irish, and they seem to be fully as liable to paresis, in this country, as other foreigners, however infrequent it may be in their native land." The authors therefore conclude, it appears probable, that race has less to do with the frequency or infrequency of general paralysis than other circumstances, such as occupation, social habits, morals, business worries, traumatisms, etc., and more than anything else in our opinion, specific infections and habits of general dissipation.

The very large proportion of terminal dementia amongst foreigners calls for special comment. If we include under terminal dementia, as the authors have defined it, the forms of secondary insanity, classed as chronic mania and melancholia, which are both more or less demented conditions; we have in every hundred Americans (say the authors) thirty-seven terminal dements, a figure which is very slightly increased if we take the Anglo-Saxon race as a whole. But among the Germans we have forty-nine, sixty-one and a fraction amongst the Scandinavians, and nearly sixty-five amongst the Irish, of cases of terminal dementia to every one hundred insane. The most natural and obvious suggestion from this state of affairs is that an undue proportion of the defective classes of Europe is unloaded on our shores, and this view is supported by the further fact, so well shown by Dr. Foster Pratt, that the foreign-

born insane are altogether out of proportion to the numbers of foreigners in the general population.

The following are the deductions of this interesting paper:

- 1. That in the white race the depressive types of mental disease are most frequent in the Germanic and Scandinavian peoples, and least so in Celts; the reverse of this appears to be the case as to the exalted or maniacal types.
- 2. That general paralysis is not a disorder to which any race is immune, but one that depends upon causes independent of racial or national peculiarities.
- 3. That the well-known fact that insanity is much more common amongst the foreign-born than amongst natives in this country, is not to any great extent explainable by the shipment of the defective classes of Europe to America. The "cranks" and epileptics and other neurotic individuals do not appear to be represented, in due proportion even, amongst the foreigners in our asylums. The cause of the excess of foreign-born insane in this country is, it seems probable, to be looked for mainly in the fact that, supposing the immigration to include only its proportion of persons below the average of mental strength and flexibility, the change of scene and associations, the difficulties of beginning life among them, disappointments, homesickness, and all the other accidents and trials that befall the newcomers, together contribute to break down mentally a vast number who under other circumstances would have escaped, and largely contribute to the mass of insanity in this country.

PROGRESSIVE MUSCULAR DYSTROPHIES: THE RELATION OF THE PRIMARY FORMS TO ONE ANOTHER AND TO TYPICAL PROGRESSIVE MUSCULAR ATROPHY. By B. Sache, M. D.

We acknowledge the receipt, with the author's compliments, of this valuable and exhaustive monograph, which the able author has prepared in a manner worthy of his record for painstaking work and of the always interesting subject.

This was the opening paper read before the American Neurological Association, at its fourteenth annual meeting.

The diseases discussed by the author under the above caption have passed under many different names. What the author wishes to have understood as coming under the term "Progressive Muscular Dystrophies" are all of those forms of disease in which a primary progressive wasting of some or all of the body is the most characteristic feature, and in which this wasting (atrophy) may or may not be associated with true or pseudo-hypertrophy of some muscles." The muscular atrophy following cerebral, myelitic or peripheral nerve disease is excluded by the author from discussion, except typical progressive muscular atrophy, which is the basis upon which the author proceeds in his discussion. The author thinks there is not sufficient reason for Leyden's hereditary forms of progressive muscular atrophy.

The author reaches the following conclusions:

"1. Progressive muscular atrophy, type Aran-Duchenne, is due to spinal-cord disease. The peroneal type of progressive muscular atrophy

bears close resemblance to this form, and may possibly have a similar pathology.

- "2. Duchenne's type of progressive muscular atrophy might be termed the hand type, while the peroneal form would represent the leg type.
- "3. Pseudo-hypertrophy is not of spinal origin. Lipomatosis is a mere incident in the course of the disease and is associated with wide-spread atrophy in various parts of the body.
- "4. There is a close relationship between pseudo-hypertrophy and Erb's juvenile form of progressive muscular atrophy, but not an absolute identity. This close relationship is marked by the onset of the disease at an early age, by the entire absence of fibrillar contractions in both forms, by the absence of reaction of degeneration, and by the occurrence of lipomatosis some time during the course of the disease. They differ from each other in the distribution of the muscular atrophy, and possibly in the histological changes in the affected muscles.
- "5. Hereditary muscular atrophy does not deserve the rank of a separate clinical entity, all forms of primary myopathies being occasionally hereditary.
- "6. The type Landouzy and Déjérine is closely related to Erb's form, the additional involvement of the face muscles not being a sufficient basis for a wide clinical differentiation.
- "7. Pseudo-hypertrophy and Erb's form should be regarded as the two representative forms of primary progressive dystrophies.
- "8. Primary progressive dsytrophies are distinguished from spinal progressive dystrophies by their cardinal symptoms—the onset at an early age, the occurrence of true or false hypertrophy, the absence of the reaction of degeneration, and the absence of fibrillar contractions."

The author also makes the following commentary on nomenclature and classification:

"This paper cannot be properly closed without reference to the subject of classification. The term 'progressive muscular atrophy,' has been variously used, both to designate the fact of a general and progressive muscular wasting, and also as the proper name for Duchenne's type of atrophy. This has led to great confusion, and it would be well if the term, 'progressive muscular atrophy,' were to be used in a generic sense merely, and if some other name were found for Duchenne's type. Erb's suggestion seems to me to be a good one, and I therefore propose to designate the type Aran-Duchenne, as spinal progressive amyotrophy.

"If my argument against the validity of anatomical distribution of atrophies or hypertrophies as a basis of classification be accepted, the classification of muscular atrophies could be reduced to the following simple form:

"1. Amyotrophia spinalis progressiva:

a Hand type; β Leg type = peroneal form.

"2. Primary progressive dystrophies:

a Pseudo-hypertrophy; β Erb's form."

OUR PRESENT KNOWLEDGE REGARDING MUSCULAR ATROPHIES AND HYPER-TROPHIES. By Landon Carter Gray, M. D., Professor of Nervousand Mental Disease in the New York Polyclinic.

"The muscles, the motor nerves and the interior column of gray matter, whence the motor nerves originate, constitute, anatomically and pathologically, a system apart, which may be termed the neuro-muscular apparatus. Disease of any one of the three component parts of this neuro-muscular apparatus—muscles, motor nerves, anterior column of gray matter—is so apt to extend into the two others, or be associated with them, that the close anatomical connection between the three is evidently the main material reason for as intimate a pathological relationship.

"The diseases of the neuro-muscular apparatus are known as:

- "1. Myelitis of the anterior horns, or cornua.
- "2. Glosso-labio-laryngeal paralysis, or bulbar paralysis.
- "3. Progressive ophthalmoplegia.
- "4. Muscular pseudo-hypertrophy.
- "5. Progressive muscular atrophy.
- "Of these, the first three—myelitis of the anterior horn, bulbar paralysis, and opthalmoplegia—are due to lesions in the anterior gray column—the fourth, pseudo-hypertrophy, is indubitably of muscular origin; while the fifth progressive muscular atrophy, is sometimes due to lesions in the anterior gray matter, sometimes to muscular lesion, sometimes to both neural and muscular lesions. Each of the three due to central lesion has an individual localization in the anterior gray matter. The first, myelitis of the anterior horn, arises from implication of the anterior gray matter of the spinal cord; the second, glosso-labiolaryngeal paralysis, arises from implication of the nuclei in the medulla oblongata of the hypo-glossal, facial and spinal accessory nerves; while the third, progressive ophthalmoplegia, is due to affection of the nuclei of the ocular nerves in the floor of the aqeduct of Sylvius and the third ventricle."

The author discusses the five subjects above named in a remarkably clear and practical manner, and the illustrations accompanying the paper are plain and appropriate.

The author gives a clear discussion of progressive muscular atrophy under their principal clinical forms, viz:

"1. The hand type.

"2. The juvenile type (Erb).

"3. The infantile facial type (Landouzy and Déjérine).

"4. The peroneal type (Charcot, Marie, Tooth)."
He concludes the subject of diagnosis as follows:

"The diagnosis of these various affections of the neuro-muscular apparatus is made, in the vast majority of cases, with ease and certainty. In every instance the symptoms are purely motor; sensory, cerebral, vesical and rectal symptoms being either temporary in duration or entirely absent. Of course, if the anterior gray column should be implicated in diffused disease extending into it from other parts of

the nervous system, the diagnosis may become a very complicated one; but this may be met by bearing in mind the usual complications. These purely motor symptoms consist, as has been said, of motor paralysis, muscular atrophy or hyperatrophy and altered electrical reactions.

"Whenever these three symptoms are present, disease of the neuromuscular apparatus may be positively diagnosticated. It then becomes a question as to whether the lesion is in the anterior gray column, in the motor nerve, or in the muscles.

"The symptoms upon which lesion of the anterior gray column may be affirmed are a sudden onset of paralysis, followed in the course of a few weeks by atrophy and reaction of degeneration; or the group of symptoms described under the head of glosso-labio-laryngeal paralysis; or the gradual paralysis of the different interior and exterior muscles of the eyeball, described under the heading of progressive ophthalmoplegia.

"The symptoms upon which a diagnosis may be positively made of disease of the muscles alone are the group of phenomena which have been described under the heading of muscular pseudo-hypertrophy, and the infantile facial type of progressive muscular atrophy described by Landouzy and Déjérine."

Many other symptoms have been vaunted by different authors as of importance in the differential diagnosis, but these are, in the author's opinion, the only ones upon which we can place absolute reliance.

"The altered electrical reactions of the so-called reaction of degeneration are only indicative of muscular change. This is indicated very clearly, it seems to me, by the fact that this reaction of degeneration has been found in cases of both peripheral and central origin, as well as by the researches of Gessler on guines-pigs and lizards that demonstrated the dependence of this reaction of degeneration upon muscular atrophy alone. Fibrillary contractions, supposed to be of so much diagnostic importance in the days of old, are found in cases of both central and peripheral origin, and are, therefore, of no importance in the differential diagnosis."

The author thus presents his views of treatment: "The treatment of all the different forms of disease of the neuro-muscular apparatus is essentially the same in its general principles—rest, electricity, massage and drugs.

"Rest is of prime importance to a muscle or nerve-degeneration from any cause whatsoever. I have never yet failed to obtain some improvement by rest in any case of muscular atrophy if there was any muscular tissue remaining. The rest should be proportioned to the extent and acuteness of the disease. In wide-spread or acute atrophy rest should be absolute in bed for weeks, or a month. In more localized disease the rest need not be so radical. In every case, however, and at every stage, it should be borne in mind that fatigue is to be avoided."

The author, however, is "no believer in the short applications and feeble currents that are so much vaunted by the German authorities.

Patients become used to electricity as they do to any drug, with this difference—that the larger doses of electricity, unlike the larger doses of many drugs, will cause no ill effects."

We do not concur in this view nor in the author's idea of absolute muscular rest.

ARCHIVES DE PHYSIOLOGIE NORMALE ET PATHOLOGIQUE.-

We have received from Mons. Brown-Sequard and G. Masson, Libraire de l'Académie de Médecine, 120, Boulevard Saint-Germain, en face l'Ecole de Médecine, the two first numbers for the present year (under one cover), of this publication, which is published under the direction of M. Brown-Sequard, avec le concours de MM. Dastre et François-Franck, sous-directeurs.

The following is a summary of the contents of these two interesting numbers; and we especially commend to the readers of the ALIENIST the second paper of Dr. Brown-Sequard, in the series on the decussation of the conductors for voluntary movements, inviting attention especially to the author's conclusions. The contents are:

"Champ d'Action de l'Inhibition."-Brown-Sequard.

- " Les variations respiratoires du rythme du cœur et de la forme du pouls."—E. Wertheimer et E. Meyer.
- "Recherches physiologiques sur la contraction simultanée des muscles antagonistes."—H. Beaunis.
- "Nouvelles recherches sur un cas d'ectopie cardiaque (Ectocardie)."-François-Franck.

"Lois de la morphogénie chez les animaux."—E.-J. Marey.

- "Empoisonnement par l'acide chlorhydrique."—M. Letulle et H. Vaquez.
- "Sur les rapports de la pression á la vitesse du sang dans les artères pour servir à l'étude des phénomènes vaso-moteurs."—S. Arloing.

"De l'énervation partielle des muscles."-A. Chauveau.

- "Influence des muscles de l'œil sur la forme normale de la cornée humaine."—C.-J.-A. Leroy.
 - "Innervation de la glande sous-maxillaire."—E. Gley.
 - "De la Greffe osseuse chez l'homme."-L. Ollier.
- "Influence de la température interne sur les convulsions."-P. Langlois et Richet.
 - "Recherches sur les nerfs vaso-moteurs de la tête."—J.-P. Morat.
- "De la quantité d'oscyhémoglobine et de l'activité de la réduction de cette substance chez les diabétiques."—A. Henocque.
- "Recherches sur les entrecroisements des conducteurs servant aux mouvements volontaires."—Brown-Sequard.
- "Excitation électrique et réaction nervo-musculaire."-A. D'Arsonval.
- "Recherches sur l'injection de l'eau salée dans les vaisseaux."—A. Dastre et P. Loye.
- "Action des injections intra-veineuses d'urine sur la calorification."-Ch. Bouchard.

This is the successor of the Journal de la Physiologie, founded in 1858, by Brown-Séquard, and since carried on by him with Charcot and Vulpian. The abundance and diversity of the materials, the recent development of anatomo-pathology and the growing importance of microbiology, have determined the creation of a new scientific organ, devoted to the latter two subjects. M. Charcot takes charge of these, while M. Brown-Séquard continues to preside over the present Archives, assisted by MM. Dastre and François Franck.

THE INSANE IN FOREIGN COUNTRIES. An Examination of European Methods of Caring for the Insane, by the Hon. Wm. P. Letchworth, President of the New York State Board of Charities. Octavo, cloth, with twenty-one plates, \$3.00. G. P. Putnam's Sons, 27 and 29 West Twenty-Third St., New York; 27 King William St., Strand, London.

To the physicians and managers connected with institutions for the insane, and to all interested in the care and welfare of the mentally diseased, this book will prove particularly serviceable and instructive.

The introductory chapter comprises a brief historical survey of the treatment of the insane in various countries from the earliest times to the present day.

Then follow chapters devoted to the lunacy systems of England, Scotland and Ireland, and to representative institutions of these and Continental countries, and a chapter each is given to the remarkable insane colony of Gheel and to the noted asylum at Alt-Scherbitz, near Leipzig, which latter illustrates the combined excellencies of a colony and a hospital.

The final and longest chapter, and the most important portion of the volume, presents a resume of the author's observations and his conclusions drawn from them. Based upon the results of his inspections of foreign and American asylums and of his own ripe experience in the supervision of the defective classes of New York State, Mr. Letchworth offers his views as regards the selection of sites and locations of asylums, the kind of buildings to be provided, the questions of sewage disposal, water supply, protection against fire, the laying out of the grounds, the furnishing and decoration of wards and rooms, the difficult problem of the disposition of the acute, the chronic, and the criminal insane, the practice of restraint and the amount of liberty that may be granted, the character of the attendants to be chosen, the religious exercises, amusements, employments, dress and clothing, visitation and correspondence of patients, post-morten examinations, the question of voluntary admission, the methods of admission and discharge, and the value of summer resorts. All of these subjects are treated clearly and explicitly. Besides these, the author gives his personal views respecting the insane in poor-houses, local or district care of the insane, State care, the boarding-out system, State supervision, and kindred topics.

The book is beautifully printed and richly illustrated with engravings and heliotype reproductions of plans of buildings and asylum interiors and pictures of historical interest.

AMERICAN RESORTS' WITH NOTES UPON THEIR CLIMATE. By Bushrod W. James, A. M., M. D., Member of the American Association for the Advarcement of Science; The American Public Health Association, etc. With a translation from the German, by Mr. S. Kauffman, of those Chapters of "Die Klimate der Erde," written by Dr. A. Woeikof, of St. Petersburg, Russia, that relate to North and South America and the Islands and Oceans contiguous thereto. Intended for invalids and those who desire to preserve good health in a suitable climate. F. A. Davis. Publisher, 1231 Filbert St., Philadelphia, 1889. Octavo, cloth, price, \$2.00.

This is a moderate and sensible discussion by a competent writer, of the claims of different climates in management of the many diseases which demand the influence of climate conjoined with medication, and as such, we commend it to physicians and health-seeking tourists. The author's views of California and Colorado coincide with our own, obtained from travel through these localities.

CYCLOP.EDIA OF THE DISEASES OF CHILDREN.—The Lippincott Company announce this work, medical and surgical, in four volumes, by American, British and Canadian authors, edited by John M. Keating, M. D., to be sold by subscription only. The first volume will be issued early in April. Part IV. will be devoted to diseases of the nervous system, with the following table of contents and authors:

"General Introductory Article on Diagnosis of Diseases of the Nervous System," by Allan McLane Hamilton, M. D., New York. "Headaches," by E. C. Seguin, M. D., New York. "Convulsions," by Morris J. Lewis, M. D., Philadelphia, Pa. "Epilepsy," by Wm. Osler, M. D., F. R. C. P., Philadelphia, Pa. "Chorea," by Wm. Osler, M. D., F. R. C. P., Philadelphia, Pa. "Trismus Nascentium." by J. F. Hartigan, M. D., Washington, D. C. "Hysteria," by Dr. C. K. Mills, A. M., M. D., Philadelphia, Pa. "Exophthalmic Goitre," by J. K. Mitchell, M. D., Philadelphia, Pa. "Painful Neuroses," by F. X. Dercum, M. D., Philadelphia, Pa. "Toxic Affections from Metallic Poisons," by J. J. Putnam, M. D., Boston, Mass. "Insanity-Delirium," by E. C. Spitzka, M. D., New York. "Anæmia and Hyperæmia (including Nutritive Disturbances)," by E. C. Spitzka, M. D., New York. "Hydrocephalus, Acute and Chronic," by Francis T. Miles, M. D., Baltimore, Md. "Cerebral Meningitis, Encephalitis, and Cerebral Abscess," by Landon Carter Gray, M. D., New York. "Tubercular Meningitis," by A. Jacobi, M. D., New York. "Myelitis, Spinal Meningitis, and Hemorrhage into Cord," by Mary Putnam Jacobi, M. D., New York. "Cerebral Hemorrhage, Thrombosis, and Embolism," by B. Sachs, M. D., New York. "Thomson's Disease, Athetosis, and Catalepsy," by G. W. Jacoby, M. D., New York. "Tumors of Brain and Cords and Pachymeningitis," by M. Allen Starr, M. D., New York. "Poliomyelitis Anterior," by Wharton Sinkler, M. D., Philadelphia, Pa. "Spastic Palsies, Hemiplegia, Paraplegia, and Multiple Cerebro-Spinal Sclerosis," by Wm. Osler, M. D., F. R. C. P., Philadelphia, Pa. "Hereditary Ataxia and Locomotor Ataxia," by Chas. L. Dana, M. D., New York. "Syphilitic Lesions of Brain and Nervous System," by Abner Post, M. D., Boston, Mass. "Diseases of the Peripheral Nervous System,"

by John Van Bibber, M. D., Baltimore, Md. "Structural Abnormalities of Brain and Cord," by Sarah J. McNutt, M. D., Yew York. "Abnormalities of Brain and Cord (Surgical Treatment, including Meningocele, Encephalocele, Spina Bifida, False Spina Bifida,") by P. S., Conner, M. D., Cincinnati, Ohio. "Myopathies.—(A) Pseudo-Hypertrophic Muscular Paralysis. (B) Simple Idiopathic Muscular Atrophy. (C) Facial Hemiatrophy," by James Stewart, M. D., Montreal, Canada. "The Surgery of the Brain and Nervous System," by C. B. Nancrede, M. D., Philadelphia, Pa.

The names selected and the subjects indicated above are all good ones, and the profession may expect a flood of light as the fountain source of this whole chapter is from whence the sun rises—in the East.

SAJOUS' ANNUAL. We have looked through the five volumes of this excellent Annual of the Universal Medical Sciences, and find them to contain a very satisfactory record of the progress of the general sanitary sciences throughout the world. Volume I. was noticed in our last number. Volume V., which is now before us, and concludes the number for 1888, is equal to the first volume in interest and value, and fully sustains the reputation of the several associate editors whose names appear with the respective articles. The articles which we have read with most interest, and which we therefore esteem most worthy of note, are that on "General Pathology," by Dr. E. O. Shakespeare, and that on the "Anatomy of the Brain," by E. C. Spitzka.

The article on "Histology," by Manton, of Detroit, and that on "Embryology Anomalies and Monstrosities," by W. Xavier Sudduth, of Philadelphia, are likewise possessed of much interest.

The article on "Physiology," by Newell Martin and W. H. Howell, is the most elaborate paper of the book, while "Forbes on Anatomy" is the briefest. But all are interesting, the paper on "Growth and Age," though too brief, being especially so.

"Manton's Technology" will especially interest the microscopist, and the "Disposal of the Dead," by Lee, will repay reading.

Hamilton discusses "Hygiene and Apidemiology," in an attractive and easy manner, giving much in little space, and Gihon "Medical Demography," in the same manner.

A good deal of territory has been gone over, and many valuable facts have been gleaned and succinctly put down by Frank Winthrop Draper, of Boston.

"Medical Chemistry and Toxicology," by J. W. Holland, is full of valuable points for the practitioner and the student like the paper preceding.

"Electro-therapeutics," is an article of value, and the opening chapter, by Dr. Geo. H. Rohe, on "Medical Climatology and Balmeology,' is a good resume of the subject.

F. A. Davis, of Philadelphia and London, are the publishers, with the Ocean Publishing Company for agent in Sidney, New South Wales, and I. A. Aitkin, Cape Town Colony.

If you are a busy practitioner and have not all the literature of 1888,

these volumes will come quite near making your library of the year's progress complete.

Recherches Cliniques et Thérapeutiques sur l'Epilepsie l'Hystérie et l'Idiotie compte rendu du service des épileptiques et des enfants idiots et arriérés de Bicêtre pendant l'année, 1887, par Bourneville, Médecin de Bicêtre Sollier Pilliet, Raoult, internes du service et Bricon, conservateur du musée. Un beau volume in-8 de lx-264 pages, avec 27 figures dans le texte. Prix 5 francs.

Du Traitement des Phénoménes Douloureux de l'Ataxie Locomotrice, Progressive par Pulvèrisations et Ether, et de Chlorure de Méthyle. Raison (A. G.) Volume in-8, de 42 pages. Prix 2f 50. Publications du Progrès Médical.

A Defence of Electrolysis in Urethral Strictures, with documentary evidence. By Robert Newman, M. D., New York, Surgeon to Northwestern Dispensary, N. Y.; Consulting Surgeon, Hackensack Hospital; Honorary Member Ulster County Medical Society, etc.

An Investigation into the Functions of the Occipital and Temporal Lobes of the Monkey's Brain. By Sanger Brown, M. D., and E. A. Schäfer, F. R. S., Jodrell Professor of Physiology in University College, London.

Twenty-First Annual Report of the Inspector of Prisons and Public Charities for the Province of Ontario, being for the year ending 30th September, 1888.

On the Relation between the General Practitioner and the Consultant or Specialist. By L. Duncan Bulkley, A. M., M. D., Physician to the New York Skin and Cancer Hospital, etc.

Note on Rumbold's Method of Treatment of Catarrhal Inflammations of the Upper Air Passages. By Ely McClellan, M. D., Surgeon United States Army.

Success and Failure of Electrolysis in Urethral Strictures, especially Dr. Keyes' Method Reviewed. By Robert Newman, M. D., Surgeon to the Northwestern Dispensary, New York.

Report of the Quebec Lunatic Asylum, for the year 1887-88. Addressed to the Provincial Secretary by the Medical Superintendents and Proprietors.

Den Variga Lungsäcks-Inflammationens Operativa Behandling. Akademisk Afhandling. At E. A. Homén. (Med 2 Plancher.) Helsingfors, 1879.

Expert Testimony and Medical Experts. By Orpheus Everts, M. D., Superintendent Cincinnati Sanitarium, College Hill, Ohio.

The President's Annual Address. By Robert Battey, M. D., Rome, Georgia.

The Family System in Practice. A Report of the Condition of the "Boarded-out" Insane in Massachusetts. By Henry R. Stedman, M. D.

Report of the Committee on Ophthalmology and Otology. By Seth S. Bishop, M. D., of Chicago.

The Continuous Use of the Bromides. By L. W. Baker, M. D., Superintendent Family Home for Nervous Invalids, Baldwinville, Mass.

Prevention of Yellow Fever in Florida and the South. Van Bibber.



THE

ALIENIST & NEUROLOGIST.

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No. 3.

ORIGINAL CONTRIBUTIONS.

Distinctive Forms of Drunkenness.

CONCLUDED.

By T. L. WRIGHT, M. D., Bellefontaine, Ohio.

TOBACCO is a depressing agent; not a paralyzing one, certainly not an exciting one; and it has no abstract and constitutional relationship with alcohol in its effects. The popular idea, therefore, that tobacco, as a rule, operates directly in producing a desire for intoxication, is probably incorrect, or is only partially correct. But that tobacco has sometimes secondary and untoward effects, as well as alcohol, is unquestionable. In feeble constitutions it produces heart weakness, with irregularities in the heart-beat—ending, possibly, in permanent injury to the heart itself, as well as to the general circulation. For this disability alcohol affords a convenient and speedy relief.

The use of tobacco by the young is harmful, by interfering, in various ways, with the natural increase and stability of the human body, and especially in the way of injury to the heart. No inference will seem to be more candid, if not indeed irresistible, than that the use of tobacco by growing children, must operate with great

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and direct force in establishing conditions of the constitution which call for intoxication,

Dr. Norman Kerr, although doubting any near relationship between tobacco and alcohol, says, that tobacco "so depressed the nervous system as to induce a neurasthenic state of nervous exhaustion, which craved for a stimulant to relieve the overpowering depressed sensation." In such cases "tobacco really seemed to predispose to inebriety." In persons of mature age and good constitutions, tobacco probably is not directly responsible for drunkenness; but in feeble constitutions, and, above all, in children, its debilitating properties must, of necessity, establish such conditions as will create a longing for the peculiar effects of alcohol.

The defective heart, as a cause of dipsomania, is on a line with those causes which find their starting points in serious physical injuries. Very considerable bodily injuries are, of course, common events. When they are of a nature to produce general defect in nerve power—as injury of the head, or sunstroke—there is likely to be established a constitutional feeling of want; there is an absence of some essential constitutional property or power, the desire for which is partly satisfied by the alcoholic impression.

Profound and protracted diseases also may suppress certain important nerve energies, to the extent that the human constitution as a whole, is unbalanced, and of course unstable and out of equilibrium. To tide over the consequent nervous distress, and equalize the nervous impulses as much as may be, the aid of alcohol is often invoked. It is perhaps needless to repeat that while this work is seemingly well and satisfactorily done, it is, in reality, not done in perfection. The equalization and unification of nerve energy, whether in mind, or morals, or body—or in them all as a whole—are completed on a plane of life inferior to the natural and physiological plane. This must be so, because the deficiencies of parts are merged in the sum total. The work appears to be good

but it is always deceptive. It may glitter and dazzle, but it is only to deceive. The products of the nervous compromises effected by the intervention of alcohol, are like witches' coin—gold at night—in the morning, dry leaves.

Amongst the undesirable effects of prolonged inebriation, and especially of the excessive drinking in dipsomania, is the gradual accumulation of certain poisons in the circulation—poisons entirely distinct from alcohol itself. Several of these poisonous substances begin to display their disastrous influences within the organism, after two or three days of heavy dissipation. Chief amongst them are carbonic acid and urea. These substances are, in a great measure, the products of the natural waste of the bodily structure, and they are carried out by the system, ordinarily, through the action of the lungs and the kidneys. But alcohol interferes with the healthy functions, both of the kidneys and the lungs, and this accounts for the accumulation of the poisons in the blood. Being distributed throughout the entire system, by the movements of the circulation, they poison and depress the vital powers everywhere. Their influence upon the brain fills it with inexpressible distress; and, indeed, their prevalence throughout the bodily structure, produces such great and universal agony, that a kind of desperate fury is a natural and very common sequence. The pleasing thoughts and delightful mental combinations of initial mania have wholly passed away, and the unspeakable anguish of the nervous system calls for instant relief.

Nothing so quickly and satisfactorily overcomes the prevailing distress as alcohol itself. Among the multifarious qualities possessed by this poison is a certain lethal power which soothes and abates pain. This is displayed in the partial paralysis of common sensation, and large draughts of strong liquors are impulsively taken to secure their benumbing effects upon the sensitive nerves.

The incentives to drink are now modified. The impulsive inebriate is actuated by a new motive. He is

not simply overwhelmed with a desire for intoxication, in the ordinary meaning of the word, but he seeks relief from an acute and harrowing pain. In truth, the agreeable fancies of primary intoxication, crowding upon the mental vision, no longer engage his attention; as a matter of fact, they have ceased to appear at the beck of alcohol. Liquor relieves the physical distress, it is true, to a considerable extent; but it does more—it mingles the excitement of its own nature with the influence of poisons not present in the first place. Common sensibility is lessened, but the moral feelings are also abated. The result is, that the aggressive, complicating poisons have their way unopposed, so that while the conditions of crime are formulated, the checks to crime are removed. But this state of the inebriate mind, which may justly become the subject of inquiry and criticism, should not be confounded with the alcoholic fury which, under the name of mania a potu, sometimes arises directly from the influence of strong liquor. The latter is true insanity.

The drunken mind, influenced by the secondary and incidental poisons, is boisterous, unrestrained and violent. The latent thought of long ago, perhaps, comes to the surface. Some faint tinge of fleeting jealousy that has been forgotten, is now brought to mind by the meddle-some industry and malevolence of alcohol.

No man can preserve a perfect equanimity of temper when in a state of severe bodily pain. Even hunger makes one irritable in mind if not in expression. The drunkard, under the baleful influence of the secondary poisons evolved by inebriation, and driven to physical demonstration by the exciting properties of alcohol, seeks some pretext for wreaking his fury upon whoever may come in his way. Unconsciously the old hint of jealousy, laid away forever by the sound mind, flashes, perchance, through the imagination of the drunkard; and thus a groundless excuse may be found for the kind of movement that is related to his savage and brutal instincts. Then comes wife murder and child murder, and then,

perchance, drunken stupor and—oblivion. How terrible the awaking! No memory of the tragedy is retained. The wretch loved his wife and his children. "How could he do such a deed?" This outcome of a drunken spree is far from uncommon, and the steps leading to it are not difficult to trace.

The spasmodic inebriate, whenever overtaken by an actual access of dipsomania, is dangerous, not only to the peace and comfort, but even to the very lives of those over whom he may possess authority. While a tragedy may occur only occasionally, as compared with the amount of periodical drunkenness abroad in the land, yet the strong impulse to murder, even though not carried into the overt act, is frequent, and is appalling. That the nature of the drunken fury often compels the mind to enter into the misty region of murderous influences, is certainly true. The ravings, the expressed wishes, and the threats of the dipsomaniac, clearly evince this fact. Every time a spasmodic inebriate becomes drunken a trap is set for human life. The conditions of murder are established within him, and most fortunate is it, indeed, when they do not come into action.

There are certain other complications associated with the spasmodic drink habit that impress both the physical and mental health. Alcohol, for example, favors the enlargement or overgrowth, of the connective substance in the bodily construction—that substance which sustains and binds together all the various parts of the physical organism. As this connective material extends throughout the whole structure, such an unnatural increase in its bulk must give rise to irregularities and troubles in many directions. The overgrowth of the connective substance may interfere with the integrity of the kidneys, the stomach, the liver, the brain, as well as of other organs. Complications like these necessarily impair the mental and moral, as well as the physical health.

It is also a feature of the alcoholic changes affecting the connective tissue, that, after a period of enlargement, there may follow a period of contraction. This movement, too, has its peculiar inconveniences and disasters. The liver or kidneys may become hardened and shrunken, performing their duties imperfectly and irregularly. It is a curious fact that this form of injury does not commonly affect both the liver and kidneys at the same time. In the compensations of morbid movements, one of these organs propably acts, to some extent, vicariously for the other. The brain itself may be injured by a shrinkage among the connective fibers—a shrinkage that strangles blood-vessels and even ruptures nerve fibers. It is easy to perceive that these conditions must be attended with disabilities and distractions in the manifestations of the mental and moral natures.

But the degenerations and changes wrought by alcohol upon the physical constitution, are not as yet fully known. Inquiry in that direction has recently been greatly stimulated, and it is progressing with a prospect of excellent results. The Pathological Society of London, has lately discussed the question of physical degeneration due to alcohol, and it is now engaged in the investigation of the subject in its multiform aspects. It is not the invariable action of alcohol to increase the volume of the connective tissue, and thus inaugurate the several structural changes that have been noticed; nevertheless, these are frequently the results of alcoholic influence. The phenomena of intoxication, and especially of the consequences of intoxication, point with certainty to various conditions of physical degeneration. Still, these conditions are not always present, or at least recognized, in their specific characters and locations.

It has been customary to look at the nervous terminals for proof of alcoholic degeneration, both of function and structure. But facts have been ascertained which indicate serious alterations in the substance of the nervous fibers themselves, through alcoholic influence. Alcoholic neuritis is a disease well known; and substantial degenerations in the nervous cords, arising from alcoholic impression,

either directly applied or indirectly, through interstitial intrusion, are very common. Facts brought out in a discussion, in the Pathological Society of London (December 4th, 1888), show conclusively that nervous fibers may become structurally degenerated by alcohol. A nerve being cut across, showed thickening of the sheath and "general infiltration, with white cells from the blood. A longitudinal section of the same nerve (plantar) showed enormous increase in the cells, and infiltration with white blood corpuscles (leucocytes)." The plantar, the phrenic, the tibial and other nerves, showed the same degenerative appearances. Sections of muscle also showed "roundcelled interstitial growth," "increased nuclei," "infiltration with leucocytes," and so on. Truly the complications attending the liquor habit extend all over and all through the physical organism.

Structural degeneracy of nerve must be attended by disturbance of function. If nerve fibers are incapable of transmitting impressions correctly from one nerve center to another, there must result imperfection in mental and moral conclusions. There must also be defect in the general health, and decidedly in the harmonious action of the several bodily parts.

That the injurious effects of alcohol upon the physical structure should be of so wide a range is no doubt partly due to the form of the poison as well as to the complicated nature of its impressions. It is a liquid. It is taken in appreciable quantities; is readily absorbed, and is carried by the circulation into the remotest parts of the organism. Besides these facts it is, in all probability, taken into the general system largely by imbibation, through the capillaries. Alcohol appears in the breath almost at once, and in much strength. Alcohol is also a substance possessed of strong affinities; so that it may find its way into the presence of certain structures, by preference, through processes of endosmosis or exosmosis—well enough, for practical purposes, interpreted by the old-fashioned term—soaking.

Temperament, and the state of individual constitutions, must have great influence in determining the parts most easily injured by alcohol. Structures least capable of resistance will necessarily suffer most. The connective substance may be regarded as, to some extent, an approximation towards something vegetative in its nature. It is not under the very active protection of nervous influences. Possibly all this may account for its readiness to fall under the bad influence of so diffusive and powerful an agent as alcohol.

The spasmodic inebriate, by the unbounded violence of his drunkenness, is apt to suffer more from physical injury to the circulatory system, the heart, the arteries, the capillaries of the brain, than others. These disabilities mean palpitation of the heart, congestion of the brain, inflammation and thickening of its membranes, and complete mental and moral wreckage.

PART III. Spasmodic or Impulsive Drunkenness.— Disabilities.

The radical distinction that exists between casual drunkenness and the drunkenness of the spasmodic inebriate is perceptible in several ways. The origination of the two is widely different, their progression is materially unlike, their complications are dissimilar and their consequences are at variance. It remains to show that their disabilities are of different orders, and that their responsibilities are unrelated. "A distinction," says Dr. L. W. Baker, "must be made between the self-controlling vice of drunkenness or acute alcoholism and the irresistible impulse of disease."

Dipsomania is an outcome of a nervous constitution, called in Medicine neurotic. A full description of the neurotic constitution is impracticable in this place. It has many symptoms and exhibits many phases—one of which is that particular form of the inebriate propensity known as dipsomania, and here now under discussion. It may be said however, in general terms, that a neurotic constitu-

tion appears to consist in a condition of nerve incertitude; or, that defect in nerve equilibrium which is displayed in the inharmonious activity of the more important divisions of the universal nervous economy. It is that constitution wherein the controlling departments of nerve energy do not operate together smoothly and without friction; where, for instance, the feelings may be unduly in excess; or mental activity is too great for healthy physical being; or, where some one or more of the great departments of human manifestations is in functional excess, or may be, in functional deficiency. Upon a nervous constitution, thus unbalanced, alcohol, in the spasmodic inebriate, may readily produce unexpected and astounding effects.

Dipsomania appears from time to time as a symptom of this peculiar nervous constitution; but it is not, essentially, a sign of it; for other symptoms may denote its existence while dipsomania is absent. In neurotic constitutions one form of nervous disease may be evident at one time, and again another form may appear by preference. When an approximation is made to first causes, definitions fail, and the simple process of imperfect description must suffice. In the neurotic constitution there seems to be an intense and morbid interest, and anxiety of mind, with respect to everything that engages the attention. It is true that whatever is uppermost in the attention usually excites the special interest of the mind. But the interest of the nervous or neurotic individual is always exaggerated, painful, worrying; and it is attended with a fretful solicitude which is unflagging, for it is perpetually transferred from the present to the future. In this respect the neurotic mind displays a certain analogy with the mind of the monomaniac, the difference seeming to be that the latter is absorbed with one thing only, while the former frets over everything. There is an affinity between a nervous constitution and an insane predisposition, the distinction being, often, more in form than in substance. Dr. E. C. Mann declares: "My experience and observation show the frequent interchangeability

of alcoholic inebriety with grave diseases of the nervous system and mind, in which the nervous constitution prevails." Dr. M. also speaks of the "fondness for low company" which sometimes pervades the disposition of the spasmodic inebriate. This is often the result of a desire to substitute simple and frivolous ideas and feelings for the consuming mentality and care of the nervous temperament. The object is to escape from self—very much as indulgence in drink may be in pursuance of the same object.

In the spasmodic inebriate there is often produced a peculiar state of consciousness, during which the mind performs its operations in a strangely dazed and perfunctory way. It evidently performs its functions automatically, sometimes, wholly so, at others, partially. After the spell is ended, it has no recollection of the acts done while in it, nor has it usually the slightest remembrance of its own existence while it was in the automatic state. That period of working life and activity is a blank in memory.

The distinguished and able investigator, Dr. T. D. Crothers, of Hartford, Connecticut, first drew special attention to this mental state as a common attendant upon impulsive inebriety. In the ALIENIST AND NEUROLOGIST, July, 1882, he declared as follows: "The trance state is a common symptom in inebriety, in which the patient is without consciousness and recollection of present events, and gives no general evidence of his real condition. This may last from a few minutes to several days." Dr. C. further remarks: "This trance condition will always be found associated with a particular neurotic state, either induced by alcohol or existing before alcohol was used."

This is a declaration to the effect that, while the trance state is induced immediately by alcohol, the susceptibility to it is confined to the spasmodic inebriate,—or, at least, to persons of decidedly neurotic constitutions. Herein, it will at once be perceived, is another and a wide difference between the characteristics of drunken-

ness in its ordinary sense, and the drunkenness of dipsomania—a difference, which bears on its face, the probability of exceptional features respecting incentives, motives and responsibilities.

But inferences are not here necessary. It is impossible for a mind to receive accurate knowledge of persons and things exterior to it when the senses are obscured and lifeless. When the receptive faculties are in good order, it may be presumed that all other mental powers are probably in like order. On the other hand, if the receptive mental faculties are impeded, or modified, or insensible, it is presumed that most commonly all the other faculties, both of mind and morals, are likewise defective and unreliable.

The impairment of the senses by alcohol must tend to mislead the judgment and depress the quality of consciousness. If a person, for example, cannot see clearly, as in the dark, he cannot know of a surety those things which are to be accurately known only through the sense of sight. If his hearing is indistinct, he cannot know of a certainty whether the sounds that he seems to hear are near by or come from afar-nor can he discriminate with precision as to the source and nature of a sound, whether it is the crying of a child or the whimpering of some brute. And it may be said in this connection that, not only is accurate knowledge wholly dependent upon accurate sensation, but the happiest moments of human life-the most precious and endearing sentiments of the trembling heart, arise from the fond recollections associated with the exercise of the senses. Word comes, perhaps, that a prodigal son is about to return home. The mother always remembers the prodigals-though bearded and grown to manhood-as little boys with soft shiny hair and bright cunning eyes; and when she hears he is homeward bound, in an ecstasy of anticipation she exclaims: "And shall I see his face again? and shall I hear him speak?" And so of all the senses. The pleasure of their exercises, and the delight

of their associations, refresh and beautify the soul, like dew upon the roses. Again: If a man does not have a distinct sense of taste, he cannot tell with any assurance what is the nature of a sapid substance that touches his palate—whether it is sweet or sour, or bitter; or in what degree it possesses one or another of these properties. If he does not have the sense of smell in perfection, he cannot judge, nor reason, respecting the nature of present odors; for, either he will not perceive them at all, or he will be unable to discriminate correctly between them. If he does not possess an acute sense of feeling, he cannot tell with absolute positiveness whether the object he touches is hard or soft, smooth or rough, hot or cold. Nay, more: If a person cannot see clearly, hear correctly, smell, taste and feel accurately-if indeed, he is in a condition of partial paralysis in his entire nervous system, he is liable to lose his sense of personal identity; so far at least, as to be oblivious to what transpires with relation to himself, while in that state of impaired sensibility. For it is the unimpeded action of the senses, and the feeling of perfect concord amongst them—one with another-which gives to a man the idea of his individual existence—his own, his personal identity.

Now it is common for a man after recovering from drunkenness to say: "I do not remember anything that occurred." This is, no doubt sometimes a mere pretext to excuse crime, but it is a pretext founded upon the undoubted fact that it may have been true, for the reason, based upon science as well as upon experience, namely—the drunken man is partially paralyzed all over. He is therefore exceedingly prone to lose his sense of personal identity—that is, his sense of personal and accountable relationship with the events and things exterior to him. He must of necessity be liable to lose his individual relationship with other persons and other things, because, being partially paralyzed in every part of his organism, he in reality, has no just and regular, and natural sense of anything whatever. The identity of an

individual, which is connected with the defective nervous power of partial paralysis is, in real truth, the identity of some other, some imaginary person, with whom, when restored to his normal condition, the man can have no links or chain of association.

But, in the course of time, the state of trance passes away, and consciousness, rising with the returning equanimity and power of the nervous system, resumes its normal plane, and leads the mind once more in fit and rational ways. The man is himself again. But acts have been performed—deeds, perchance of folly or of crime have been done, during the period of mental latency. Who did these things? The regenerated mind is in total ignorance of them. The mysterious power that shaped the conduct when these acts were performed, no longer exists. It can give no reason. It can feel no punishment. The sound mind may be made to suffer for it; but the real culprit has vanished. It has disappeared from earth as effectually as the dead. It has exhaled like a morning mist, and is known no more. Truly men are sometimes the playthings of phantoms—powers, forces, agencies unseen and uncontrollable, coming from imaginary realms, and then mingling forever with the primeval darkness. Of a surety those ancient and venerable sages who wrote of evil spirits and devils entering into men, and being cast out again, do not seem to be quite worthy of the contempt in which they have sometimes been held.

Although there may probably be present in some mild cases of alcoholic trance, a modified sense of personal identity incident to modified sensibility of nerve, this is not always recognized in memory when the mental powers resume their natural purity and perfection.

The truth and the importance of the statements of Dr. Crothers, respecting the alcoholic trance, were at once recognized by the best minds engaged in the study of inebriety. Such men as Hughes, Beard, Parrish, Kerr, Shepherd, Thwing, and others, entered into the investigation of the subject, and have confirmed the facts as

stated. They have moreover contributed very largely to swell their number, and also have aided in presenting an enlightened explanation of their occurrence.

It has been said that alcoholic trance "will always be found associated with a particular neurotic state." This, as a general rule is true. Whenever alcoholic trance occurs it will usually be found in some one who is a spasmodic inebriate; and it will be particularly apt to appear in persons who have become inebriates after injuries to the head.

But there is every reason to believe, nevertheless, that the effects of alcohol upon the casual drinker may occasionally be such as to greatly derange the nervous equilibrium; and thus upon some slight exciting cause presenting itself-induce a state of trance. It is to be observed that this condition is quite different from what is known as unconsciousness—which may indeed supervene from alcoholic excess in anyone. But it is a state characterized by a defective, a deteriorated, a partial consciousness—one which is operative below the plane of the average consciousness; and which is, therefore, out of relationship with the usual associations of the mind with the outer world. The ultimate consequence is that the natural connections between the past and present, as well as between the present and future, are violently disrupted. This leads to a very important proposition, namely, the trance mind, or the trance consciousness—is deprived of the use of past knowledge and experience in determining the character of its impulses and of its acts. The formation of rational motive is impossible, there being no facts available for mental consideration. This completely eliminates the elements of judgment and reason from the trance state in the exercise of choice or will; neither can there be rational judgment or will, except there is reference to the past-except indeed, there is a sound and wakeful memory.

A certain professional gentleman of fine education is a spasmodic inebriate. Recently, he partook of alcoholic

liquors to considerable excess for two days. Sometime near the middle of the night after the second day's drinking, he suddenly became aware that he was absent from home, and indeed, was moving around in a small stable in an obscure alley, two squares from his place of residence. He had very little knowledge of the locality at any time, and had none whatever, of the little rude outbuilding in which he discovered himself. Three of his acquaintances, bearing with them a light, were in the inclosure with him. He at once recognized the facts that he had wandered away from his home and that the gentlemen present were really taking care of him. His return to a natural state of consciousness was apparently instantaneous-exactly as though he had awakened from a profound sleep. He knew not how he came to be in the place where he found himself, nor why. There was not the slightest hint in his recollection of anything that had preceded his sudden awaking, either explanatory of the existing circumstances, or indeed, of anything whatever. He could not conceive of any motive which would have actuated him in resorting to the obscure and unknown locality. The awaking itself was so abrupt and complete that it could not have been simply a recovery from drunken stupor. Such a process, is always, to some extent at least, gradual. He was so thoroughly surprised as well as ashamed that he asked no questions, but merely thanked his friends and went home. He was however lost in astonishment at the nature of the incident; and even now contemplates with alarm the evident danger, both to himself and to others, that might grow out of a mental state controlled by powers concerning which he has no knowledge and over which he has no authority.

The state of trance may supervene, as might be expected in nervous constitutions, upon a slight application of the alcoholic influence; for, most commonly, in such constitutions this influence is more of the nature of an exciting cause in producing the trance condition than of a substantial cause. The person affected may not

appear as though very much intoxicated. He may seemingly perform his actions, both physical and mental, with tolerable propriety. To the close observer, however, he will be apt to seem somewhat abstracted and distrait, though there are instances where he is talkative enough. It is doubtful though whether this phenomenon is not, while it lasts, the mania of sheer insanity. The state of alcoholic trance may continue for hours or even days.

The hypnotic or trance state is mainly the outcome of a peculiar nervous constitution, already at hand. When alcohol operates as a factor in producing trance, it is chiefly as an exciting cause in the production of a nervous condition in activity, which is already in existence potentially. The paralysis of alcohol no doubt exerts considerable influence in developing automatic nervous movements, the conditions of which are mainly in existence already but have been hitherto latent. If the disabling impressions of alcohol were equally strong upon each and every nervous capacity, they would merely reduce nervous force in an equal proportion everywhere, the result being simply an approximation to imbecility, for the nervous powers would be relatively unchanged amongst themselves.

But the fact is that alcohol, while a universal paralyzer, really distracts the nervous capacities in their mutual relations; so that their main departments—as of mind, of morals, of organic force and of motor vigor, are disturbed in their interaction, both as to their ready consensuality of movement and as to their strength.

But trance may appear sometimes without the intervention of any alcoholic impression whatever. Men of nervous constitutions, especially when worried by business or weakened in nerve resistance by some slight but persistent morbid condition of the system, occasionally disappear mysteriously, and they may discover themselves days, and even weeks afterwards, in some unexpected and remote region of the world. Trance undoubtedly may supplant some other form of nervous disease, or may act vicariously for something else that is threatening,

and it may continue for many days. No one is more surprised upon recovering normal consciousness than the missing individual himself. It is likely that in such instances the trance is simply an incident in the transmutation of neurotic forms. Indeed, it would seem that it should be classed prominently amongst the transmutable forms of nerve symptoms that are closely allied to insanity.

In illustration of this idea the case of a certain clergyman (once given to the public in another connection) may be cited, and more especially as it has apparently assumed new features. This is a case where a man seemingly epileptic recovered from his fits and developed occasional periods of trance, or of nervous automatism, extending over many days in succession. This gentleman wrote and preached a sermon "on a familiar text," when not feeling very well, and in three weeks thereafter he wrote and preached a sermon on the same text, and practically the same sermon. He has no recollection of writing or preaching the first sermon, although he had previously contemplated a work of the kind. He became aware of his singular mental condition by finding the manuscript of his initial effort filed away amongst his papers. Some of his congregation, however, noticed the break and wondered at it.

Speaking of this case, Dr. C. H. Hughes, of St. Louis, says in a personal letter, "I do not think the term amnesia a bad one in the sense of loss of memory of self-consciousness in alcoholic cerebral automatism or trance. The state described, and which I have often seen, is not complete failure of memory—for memory is automatic like the other cerebral acts, but loss of normal remembrance of self—a perverted and obliterated self-consciousness. In one trance state people often remember the acts of the preceding similar condition." Showing that similars in consciousness are related with each other, while dissimilars are not.

There is little doubt that the state under discussion varies somewhat in its manifestations; sometimes partaking of the nature of ordinary somnam bulism, and sometimes of

true automatism—or a living, moving agent, operating solely upon the impulses drawn—without regular order or natural relationship—from inward impressions, stored away through the living experiences of times and events past and gone, while the feeling of the ego, of self, of personal identity, brought into consciousness only by external impressions, is totally obliterated.

Having moved to a distant part of the country, the clergyman alluded to was lost sight of for two or three years. Lately, however, he was seen, and in answer to inquiries said that he had been in good health ever since he had recovered from his "seventeen months' illness." He explained that he had been confined to his bed for seventeen months with agonizing pain, consequent upon the passage of gallstones. His disease was at first pronounced to be stricture of the esophagus; next it was called ulceration of the coats of the stomach, and finally it was the presence and movement of biliary calculi. His description of his last day's sickness and final recovery was nearly as follows: "In the morning I told my wife I was going to have the worst day of pain I had yet experienced." Sure enough, in a short time the pain came on. Morphine and other narcotics were taken to the extreme limit prescribed by his physicians. The medical gentleman in attendance happened to be out of town. Medicine was of no avail. The agony was so great that he "prayed fervently to die," and he repeated the petition many times during the day. Towards evening his physician had returned, and in passing, heard his groans and came to him. At last relief came.

The next morning he felt better than for months. The second day he requested his wife to prepare for him a rich and plentiful meal, such as the gentleman is very fond of. He ate with pleasure and without any bad effects. The succeeding day he traveled one hundred miles by rail without trouble or injury, and he declares that he has been sound and well ever since. But the fact is that two hours before this remarkable history was

given, the gentleman was swallowing morphine, by advice, for what he termed a violent attack of pleurisy. His pain had yielded readily, and despite the "pleurisy," the reverend gentleman proceeded on a long journey the same day.

The nervous constitution of this man is indeed remarkable for its exceeding instability. But he affords a strange example of the readiness with which the several neurotic forms allied to insanity, supplement each other—sometimes automatic, at others epileptic, again neuralgic, and probably others, indistinct of form, but horribly real to him.

Acute Trophic Neuroses in the Insane, especially the Diffuse Phlegmon.*

CONCLUDED.

By ReserveLage Helweg, Aarhūs Sindssygeanstalt.

THE HARDENED CORD.—Congenital abnormalities. The triangular tract as well as the diffuse formation well marked. At the fourth cervical nerve, the left posterior horn almost entirely wanting, and at the sixth the right is very short and thick and without connection with the periphery. Acquired abnormalities: Pia greatly thickened, especially in its intramedullary extensions, which are at the same time firmly woven. Arteries and veins either with thickened walls and narrow lumen, or greatly dilated. The white fibers show an intense sclerosis in the left anterior pyramidal fibers, and right lateral pyramidal fibers, the coarsest nerve-fibers only left. The sclerosis, as is usual in descending generations, does not include the entire tracts; in the anterior column only affecting the posterior part, disappearing at the lowest point of the cervical region, and in the lateral column leaving a belt healthy between it and the mixed fiber zone of the lateral column and the cerebellar tract. Besides, there is in the anterior and lateral columns a diffuse increase of the interstitial tissue of a sclerotic character. This affection increases longitudinally from above downwards, and transversely from before backwards, thus attaining its greatest intensity at the antero-external boundary of the left pyramidal tract. Here it forms at the eighth cervical nerve large connective tissue islands, which, by thickened septa through the cerebellar tract are continuous with the enclosing layer, which also is thickened here, this not being the case at the remainder part of the periphery. In these connective tissue islands, formed of a fibrillar connective tissue and a few shrunken granular fat-cells, the nerve fibers have entirely disappeared. On the right side,

^{*} Translated from the "Nordiskt Medicinskt Aichiv," by Haldor Sneve, M.D., Assistant-Physician, Dayton Asylum for the Insane.

at the sixth cervical nerve, is a similar but smaller island, in the middle of the cerebellar tract, at the first and second dorsal nerves, a small bow-shaped islet in the anterior column parallel with the periphery, and at the third, one in the interior part of the mixed lateral zone. But besides these sclerotic sections, there is in the right antero-lateral column, one quite large focus of softening and several small ones; the former at the first dorsal nerve, where it includes the mixed lateral zone, the anterior horn, the gray commissure, part of both posterior horns, and the contiguous part of the posterior columns. In the first named the nerve fibers are swollen, marrow flowing together, axis-cylinders invisible, blood-corpuscles and a very few granular fat-cells mixed in between. The connective tissue shows first swollen cells and granular degeneration of the fibers, later becoming indistinguishable in the softened masses. Anterior horn's tissue effaced, boundaries indistinct, ganglion cells few and in places without processes; in the commissure the central connective tissue has lost its fibrillar structure, is granular and atrophying; in both posterior horns, but mainly the right, are a number of shrunken granular fat-cells. Several vessels in this region contain obstructing thrombi; tortuous and dilated capillaries in great number are to be seen, and in both gray and white matter these or arterioles are frequently looped, occasionally spiral-shaped, and held together by connective tissue of pia, forming round lumps. In places there is an exudation of blood-corpuscles around the vessels. Upwards, this affection is limited to the first dorsal nerve; downwards, it loses itself quickly, disappearing completely at the fifth. Posterior columns are uniform throughout the whole length; the peripheral part normal; but in the center the reticulum cells are swollen, their processes short, broken off, the tissue appearing as though forced apart by a swelling of the marrow of several nerve fibers, while the axis-cylinders in these are uninjured. Here and there, as mentioned, the softening process in surrounding parts attacks the posterior columns. The gray matter, on the whole, uninjured, if we except the softening at the first dorsal nerve. Ganglion cells otherwise normal, strongly pigmented. The columns of Clark are included in the softening at the place named; further down they are healthy. Likewise the cells in the tractus intermedio-lateralis. Nerve roots from the cervical region also show thick-walled vessels, otherwise normal.

Muscles. Flexors of forearm. Fibers pale, with fine transverse striation. Nuclei increased in number, otherwise nothing abnormal.

In this patient arose simultaneously an affection of the arm, which on the sacrum is designated acute decubitus, and an affection of the thigh, which must be called a diffuse phlegmon; the first was a severe erythema in which developed rapidly a considerable mortification of the skin and subcutaneous tissue; the second also erythema, but leading to suppuration of the subcutaneous tissue alone; the last erythema extended later over the greater part of the extremity, and a blood-bulla which appeared shortly before death, indicated also here a preparation for gangrene of the skin. These two affections, which were not continuous, showed themselves related not only by being simultaneous and unilateral, but also by appearing in the two lame extremities. This leads us to seek for their common cause in the central nervous system, and especially in the brain. There were, just as little in this case as in the former, previous to the acute skin affection, but few symptoms indicative of an acute central affection; but this does not exclude such, yet they must have been so situated and of such nature that they were not prominent as psychic, motor, or sensory symptoms. In this patient there had been a previous acute cerebral affection three years before; she suffered from mitral stenosis with valve vegetations, so that emboli could have been expected; but the cortical softening arising in the brain seemed, from its slow development, rather to be due to a thrombus. This led to the destruction of precisely that part of the gyrus centralis anterior which is pointed out by Charcot to be the cortical motor center of the arm, with also some atrophy and shrinking of the leg center, the facial and speech-center being uninjured. Clinically this gave a monoplegia brachialis and monoparesis cruralis; secondarily came the descending degeneration of the appurtenant motor paths and contracture of the arm. The descending degeneration

involved not only the internal capsule but also the external; concerning the physiological signification of this part we know nothing, but I report this find, partly, because in the above named article on the vasomotor nerve-paths, I expressed the belief that vessel nerves of the extremities, which also have their origin in the same region as the motor nerves, pass through the external capsule, partly, because I have never seen it mentioned before. No salient difference in the vasomotor condition of the two sides existed; vessel-relaxation all over; only the vasomotor disturbances belonging to the erythemas were peculiar to the lame extremities. If a lesion in the vasomotor paths could call forth trophic neuroses, trophicacting fibres would of necessity have their course in the same paths; and if there are special trophic nerves, it is also probable that they follow the vessel nerves, as vasomotoric and throphic disturbances pass over into each other without limit. A secondary degeneration in a musculo-motor pathway, it is usually accepted, will call forth a spastic condition of the muscles, giving the secondary muscular contractures, that is, irritate the nerve fibres; in a vasomotor-trophic path it would act in the same manner, by irritation, and as trophic neuroses, according to clinical experience, arise by irritation of nerves, there is nothing unreasonable in the supposition that the erythemata and phlegmons treated of could be ascribed to the secondary degeneration in the external capsule, and so much more so because the proportion of granular fat-cells demonstrated it to be recent, at any rate, of much later date than in the internal capsule. This is greatly hypothetic, and as there are also disseminated cord-lesions, perhaps the cause must be sought here; there may possibly also have been disease of the sympathetic and peripheral nerves; they were not examined. It is again the diffuse myelitis in varying intensity that we meet with in this case. In the peripheral portions it has a sclerotic character, so that in some places it resembles disseminated sclerosis, yet it was not spread

out enough to give characteristic symptoms; in the central portions, on the contrary, we do not see the fibrillar connective tissue, only swelling of the reticulum cells and thickening of the vessel-sheaths; to this is added softenings here and there, especially at the first dorsal nerve. where it appears, as in the brain, to be due to a thrombus. Here there is complete destruction of the right anterior horn with the surrounding white matter, together with beginning destruction of both posterior horns and part of posterior columns, while the left anterior horn and left antero-lateral column are relatively uninjured. As the cord was only taken out to the middle of the dorsal region it is very uncertain to seek a connection between the clinical and anatomical "finds." Among the affections of examined portion of cord in which we would seek for the cause of the cutaneous affections, the last considered is the one most likely to be this, as it was of most recent date and corresponded to the seat of these affections on the right side of the body, being more disseminated here than on the left side. There is, however, this difficulty: this segment of the cord occupies such diverse relations to the upper and lower extremities; to the first named it gives off nerve fibers of all sorts; to the last named, on the contrary, none; at the most, vasomotor fibers, and this is yet doubtful, pass to the lower extremity; otherwise a connection with this exists only through the cord's own longitudinal fibers.

III.

While it has been doubtful, in the preceding Case-histories, if the diffuse phlegmon and allied affections were the direct result of changes in the nervous system, although such were present in rich measure, a couple cases will now be cited in which these skin-affections were so intimately joined to acute spinal disease that they cannot be considered otherwise than as results of this, equally with the motor and sensory derangements.

VI—Dementia. Nephritis. Paraplegia, Diffuse phlegmon, Myelitis chron. diff. Myelitis acuta transversa cervical, and poliomyelitis lumbalis.

Patient is a 60 year-old tailor, with family predisposition; when 20 years old he had typhus fever, and became somewhat affected mentally at the time, and in the succeeding years had annually an attack of restlessness and mental disturbance: in his thirty-eighth year an unusually severe attack brought him to the institution, where he has since remained. In the course of years the attacks left him, and he became somewhat dull; but up to the last, continued an industrious worker and zealous dancer. From his forty-fourth year he has suffered with tremors, the head especially in rocking motion, and hands shaking; it had no resemblance to paralysis agitans and did not hinder him in the use of his extremities. At the same time began a pigmentation of the skin, which was especially marked on the head and the dorsal surfaces of hands, where it had a dark dirty brown color; it could be distinguished faintly over the entire body. He was stout and well nourished.

January 22nd. Last autumn he emaciated rapidly, became dyspnæic, cyanotic, and had asthmatic bronchitis with purulent expectoration; had great œdema of feet, frequent and scanty micturition, and considerable albuminuria. He was put to bed and has since remained there. Under use of mixt-boraxata the amount of urine increased, ædemas disappeared and bronchitis ceased, but albumen remained in the urine in variable quantities. Looks weak and feeble. Complains lately of weakness in the limbs; when he stands, he swings forward and backward, walks with short, uncertain steps and dares not try it without assistance. When his hands become cold at night, they contract convulsively; muscular power weak in arms and legs; no pain; local sense seems good, but pain-perception slight; patellar-reflex lively; limbs poor; no œdema; but very little albumen in urine.

February 13th. Weakness of limbs remains; arms now so weak that he cannot lift a cup to his mouth. Œdemas again appeared; considerable ascites, urine very scanty, reddish-brown, turbid, contains a great quantity of albumen, in the sediment granular casts and uric acid crystals.

February 15th. Tendon-twitchings and uniform convulsive seizures of the upper extremities; respiration

alternating between complete pause and alarming respira-

tory movements.

February 17th. Respiration easier; the convulsive shakings continuing and quite severe; ædema in legs very considerable; on the legs have appeared numerous ecchymoses, hemp-seed in size, which begin as hyperæmic spots, in places affecting the hair follicles, then becoming dark-red papules, and finally, small ecchymoses. From the legs, where they are numerous, they extend, more discrete, up the thighs, body and head, to the edge of the hair; on the arms they seem to be just forming; three ecthyma pustules have formed on different parts of the body; pigmentation seems to be deeper and an icteric hue has appeared in the sclerotics; tongue dry; urine and feces passed involuntarily.

February 18th. Both legs greatly swollen, some red-

ness on right.

February 19th. In the course of the night, the ædema of left lower extremity has disappeared completely, but swelling of right has increased; skin red and glistening with fine ecchymoses at lower part; on the posterior surface is a hard, tender infiltration about one inch wide; limb is flexed at an acute angle and opposes extension; stools very thin; urine passes continually; since yesterday the respiration is again intermittent and rough, and the convulsive movements of upper part of body have returned; he is soporose.

February 20th. The erythematous skin on right leg is now a dark ecchymotic surface; a light icteric hue of

the whole body.

February 21st. Died last night.

Autopsy.—Body emaciated. Right leg and foot swollen, skin occupied by fine ecchymoses, which, around the ankle and up along the posterior surface, in a narrow line, have coalesced and are of reddish-blue color. The skin of whole body is of an intense yellowish-brown color, greatest on the forehead, and everywhere are small pea-sized

ecchymotic papules.

Cranium well formed, bones thick and without diploë. Dura yellow-colored. Subdural fluid somewhat increased. Arachnoid is delicately marbled at its convexity; the sub-arachnoid fluid slightly increased. Pia comes away in medium-sized patches, its vessels containing some fluid. Cerebrum's weight 1300 gm., sulci gaping, gyri sharp-edged. Corticalis very narrow; tissue soft and moist, with a few-

bleeding points. Fornix and septum softened; ventricular fluid considerably increased; ependyma smooth. In the ganglia nothing abnormal. Arteries at the base somewhat sclerotic. Medulla spinalis in lumbar and dorsal region firmer than usual; in the cervical region, on the contrary, soft, and in one portion corresponding to the interspace between the fourth and fifth cervical nerves, the pia feels like a sac filled with mush-like matter. A crosssection reveals that the distinction between white and gray matter is lost, and the consistence semi-fluid; in other parts of the cord the distinction is well marked. Pericardium contains a tablespoonful of clear, somewhat darkcolored fluid. Heart very large in all directions, and firm; weight 600 gm.; left ventricular wall 2 cm. thick; right, I cm.. Aortic valves sound; venous openings large; mitral valves healthy. Right pleura completely adherent; left, empty. Lungs inflated, dark, and filled with "foaming œdema;" posteriorly and inferiorly, hypostasis. Peritoneum contains some icteric-colored fluid. Liver of natural size, cut surface nutmeg colored, the red portions slightly depressed, the yellow prominent. In the gallbladder a quantity of thin bile, efflux free. Spleen of normal size and consistence. Kidneys small, especially the left. Capsule comes off easily; surface granular; corticalis very narrow, of reddish-blue color, without distinct differentiation. Supra renal capsules wrinkled; small yellow knots in both parenchyma and on the surface, of which some are calcified; at the base some cavities. Intestines not examined.

Microscopical Examinations.—Medulla spinalis and oblongata. Hardening successful, even in the softened portions. Congenital abnormalities. The triangular tract very prominent; the diffuse formation indistinct because of changes in this region. The central canal absent everywhere, and no trace of its epithelial cells. At the third cervical nerve begins an abnormality of the gray substance, in that the left anterior horn becomes considerably smaller than the right, and the anterior median fissure opens into it. At the fourth cervical the left anterior horn is a small, irregular, soft lump; the posterior horn is entirely wanting, and the anterior and posterior fissures are cut off at about their middle. At the fifth cervical nerve the left side is quite restored; but the right anterior horn is now converted into an indefinite, lumpy mass, spreading over into the anterior column; fissure anterior still wanting. At the

sixth cervical nerve everything is in its proper place again and continues so down the cord. At the eleventh dorsal nerve the left anterior horn is some smaller than the right,

but only for a short distance.

Acquired abnormalities: Pia greatly thickened and very rich in pigment, both in cells and lying free; the outer layer grown together with the enclosing (inner) layer down to the bottom of the anterior median fissure. Vessels dilated and greatly thickened, in places cell-exudation The white fibers: Throughout the whole about them. length of both cord and oblongata there is a peripheral softening of variable intensity. The enclosing layer thickened and its fibrous structure replaced by a granular; the larger septa thickened, tortuous and likewise granular, the finer septa wanting, the medulla of the nerve fibers swollen and flowing together; axis-cylinders, as a rule, absent. Toward the center of cord there is connective tissue hypertrophy about all the vessels, their lumen narrowed almost to closing; the reticulum cells enlarged, some to colossal dimensions, glistening, and their processes broken off; in all coarse nerve fibers the medulla is swollen. hardly visible, but the axis-cylinders normal, centrally situated; the fine fibers unchanged. These changes are much more marked in the antero-lateral columns than in the posterior columns, increasing from below upwards, the peripheral softening culminating at the fourth, and especially at the fifth cervical curve. Here it is most intense and penetrates furthest inwards, to meet an outgoing, central, acute myelitis. The gray matter is here, as stated, deformed. It is besides, vascularized by delicate vessels, its tissue effaced and pale, and thickly crowded with small round nuclei; anterior and posterior horns equally affected. The surrounding white matter completely liquified, and in it are large, swollen, tortuous axis cylinders. Upwards the poliomyelitis loses itself gradually, while the white fibers return more quickly to their normal condition; downwards, on the contrary, it has ceased essentially at the sixth cervical nerve; and the gray matter remains normal to the lumbar region, where the hyperæmia and nuclear formation is again prominent, the tissue outlines becoming thereby indistinct; it does not arrive at complete disintegration as in the cervical region however. The ganglion cells throughout are deeply pigmented, the protoplasm often pale as in beginning waxy degeneration; at the fourth and fifth cervical nerve the processes are thin and tortuous, or entirely wanting; in the lumbar region the cells are somewhat swollen and pale but otherwise uninjured. In the medulla oblongata the gray matter in the rhomboid fossa is greatly affected by superficial softening, involving especially the posterior nucleus of the vagus, the lesser auditory nucleus, while the hypoglossal nucleus, which lies deeper, is unaffected. Nerve roots of cervical and lumbar cord show some increase of endoneurium, otherwise nothing abnormal. Muscles of right upper and lower extremity: Many of the fibers healthy, but also many greatly swollen, lusterless and with exceeding fine longitudinal and transverse striation, the last at length wholly disappearing; numerous nuclei, often in long dense longitudinal rows or in groups and numerous but disseminated fat granules; margins in places regularly indented so that the fibers look tortuous. In the connective tissue, rich nuclear proliferation; likewise in the arteriole walls; capillaries increased in number. These changes are greatest on the leg, weaker in the upper extremity and the sections from thigh almost healthy. Sympathetic: Ganglia of right side from cervical, dorsal and lumbar regions; on the left side only from dorsal. Cervical ganglia hard and rough, the remainder of natural form; in nearly all are a number of circular, dark-brown points revealed on cross-section. Under the microscope these are seen to be due to vessel dilatations, and especially of the venous arterioles. These have in some, cell-proliferation in their walls and are then empty; in others, very few nuclei in the walls but gorged with blood-corpuscles, dilated and tortuous in every degree and form. Especially prominent are the circular dilatations; they are parallel with the vessels, surrounded by a thin membrane with few nuclei, and occasionally grouped, resembling bunch of grapes. They are formed almost exclusively in the cell groups. The wavy connective tissue greatly increased, whereby both the cell groups and individual cells are forced apart. It is often rich in nuclei, and also young connective tissue composed of spindle-shaped cells with large oval nuclei, is to be met. Ganglion cells all deeply pigmented. Capsule cells considerably increased; they lie in three to four layers about the ganglion cell and accompany this if it be isolated; those of the outer layer seem to form connective tissue which joins the surrounding connective tissue, so that the capsule does not accompany the ganglion cell

when it is isolated; this latter is then atrophic and without a nucleus, and finally, nothing remains but a lump of pigment representing it. Nerve fibers not appreciably altered. The changes are greatest in the second cervical ganglion. In the lumbar region are signs of a more recent inflammation in the richer capillary network and appearance of young cells. The left side, of which we only have the dorsal part, on the whole, more affected than right. Liver: The red parts are composed of a mixture of granulation cells and disintegrated liver cells overrun by red blood-corpuscles. In all liver cells a lump of pigment, and of many this is all that remains; also, in the yellow portions the cells are pigmented and between them are granulation cells, shooting in from the margin of the lobes, at whose junction are portions of pure granulation tissue with beginning formation of connective tissue. Kidneys: The outer layer of corticalis almost wholly mature connective tissue with few vessels; from here processes penetrated the deeper layers, where the connective tissue is younger with numerous gorged capillaries and spindle cells. The capsules of Bowman often thickened with several layers of spindle cells on their inner surface; glomeruli shrunken. The convoluted tubules have granular epithelium with indistinct nuclei, but they are not fattily degenerated and always have a lumen even though the epithelium is detached from the walls. In places we meet with large areas of connective tissue between the tubules. The large straight vessels between the pyramids are quite filled with blood-corpuscles. the pyramids there is also an interstitial cell formation declining toward the apices. The tubuli and their epithelia are intact here, only the light portions of the loops of Henle being often filled with colloid masses and occasionally, also, they are straight and lie like pearly rows between the collecting tubes. Strongly refracting pigment lumps are also to be found collected in the loops of Henle. Supra-renal capsules: The cortical layer shows various-sized localized fat infiltrations, occurring in straight lines. The small knots on the surface are composed of fat infiltrated cortical cells, surrounded by sacculations of the capsule; through minute openings the contents are in communication with the cortical layer which at these points is very vascular, the tumors themselves being poor in vessels. Skin: In the deepest layer of rete Malpighi, are large, brown pigment granules, situated thickly about

the cell-nuclei, forming a sharply defined border toward the corium. The papillæ on section look like round ecchymoses, the size of small peas, surrounding the roots of the hairs and extending down toward the subcutaneous tissue. From this several well-filled vessels extend to the bottom of the hair sac, which is itself intact, while the surrounding parts are very vascular and infiltrated with free blood-corpuscles and round cells. In the deeper layers of the corium these are less thick, but in the upper layers they form a compact mass, elevating the papilla at the funnel-shaped mouth of the hair sac; at the sides it does not extend as far as in the deeper layers and terminates in a sharp border. The examination of the erythema has been given on page 9.

This patient presented for many years, besides his insanity, a continuous trembling that indicated a severe affection of the central nervous system. The skin became at the same time pigmented, especially on the hands and head, in intensity rivalling that of Addison's disease. Pigmentation is a wide-spread phenomenon in the insane (we saw it in the preceding case and will meet it again in the next). I shall not consider it further than to mention that as disease of the supra-renal capsules has been abandoned as the cause of morbus Addisonii, investigations have recently been made of the semi-lunar ganglia and plexus belonging thereto, for a cause of it. This has also been advanced by Burger' who is the last, as far as I know, who has concerned himself therewith. In the meantime, in several cases researches have given negative results, and Eulenburg and Guttman² have for a long time advised not to limit the examination to the semilunar ganglia, but to include the whole trunk of the sympathetic, as Burresi has found this pathological throughout in one case; advice which does not, however, seem to have been followed. In our two cases the semilunar ganglia were not examined, but in the trunk ganglia we found connective tissue hypertrophy with death of the ganglion cells in somewhat different forms; in one case

2. Op. cit., p. 184.

^{1.} C. Burger: Die Nebennieren und der morbus Addison. 1833.

characteristic vessel dilatations. In ten other insane I have examined the trunk ganglia more or less thoroughly, and in six cases found varying degrees of interstitial change, but only in the greater degrees was there an appreciable atrophy of the cells. It seems that the pigmentation was in direct proportion to this. To return to our patient: When he had reached the age of sixty, albuminuria and œdemas appeared; the cause of this was an interstitial nephritis, which only varied in degree from those, as has been stated, we often find in our patients. This is the only one I have seen giving clinical symptoms. Hereto was added an icterus, as we have seen, due to an interstitial hepatitis, which is almost as frequent a find as the nephritis, and in this case unusually severe. confinement in bed for a couple of months because of the foregoing, a gradually increasing paresis of all the extremities developed, which in the course of four to six weeks led to his death with signs of respiratory paralysis (softening of the vagus nucleus). About a month after the beginning of the paresis, an eruption of hemorrhagic papules over the whole body and some individual ecthyma pustules appeared; and finally, following these, an hemorrhagic erythema, changing to diffuse phlegmon. Section showed, besides the disseminated affection of the sympathetic, partly a diffuse and partly a circumscribed affection of the cord. The first was a cortical softening of decided chronic character, a form we have not hitherto met. Heretofore the myelitis of the cortex has been of a sclerotic character, while the center has been softened, but the cortical softening is just as frequent as the other in the insane. The circumscribed affections were a transverse softening myelitis at the fourth and fifth cervical nerves and a poliomyelitis of the lumbar cord, both with the impress of being acute.

The first explains the paraplegia; but how about the skin affections? Their appearance in the absence of all outer causes, but in the face of a rapidly increasing paraplegia, surely denotes a common cause, and the universal

papular eruption can also be relegated to the cervical myelitis, providing that the action occurs through the fibers that follow the vasomotor tracts, as it is known that the vessel-nerves of the head also pass down through the cervical cord, in order to take an upward course through the sympathetic. The erythema of the leg could be assigned to the poliomyelitis in the lumbar region; but as this, as well as the disease in the cervical cord, was equally intense on both sides, we have no explanation of the fact that only one member was attacked. Entirely unaffected the other limb was not, if only in a negative sense. It was highly characteristic to see the considerable ædema disappear wholly in one night, and firm infiltration develop in the right leg in the same time. Now, as stated on page 25, if the nerves have a decisive influence on the development of ædemas it is not unreasonable to suppose that they also influence their disappearance. One could also seek for the cause of the skin affections in the sympathetic, but opposed to this is the fact that the process here, if not entirely ended, was yet of a marked chronic character. However it must be remarked that in the lowest part the process seemed more acute, with developments of numerous round cells and recent softenings around the ganglia, but the removal of this portion was so unsuccessful that I dare not say anything decisive about the condition of the ganglia. The peripheral nerves were not examined.

VII.—Circular Insanity. Acute atrophic paresis of the upper extremities. Pneumonia. Intestinal Catarrh. Arthritis genu, and diffuse phlegmon of the left lower extremity. Poliomyelitis anterior cervicalis.

Merchant, æt. 48, predisposed, suffering with circular insanity; deep depression alternating with light exaltation. With the first he was for a time confined in the asylum, but not with the last, until in April, 1885, after severe mental excitement, a violent state of exaltation came on, which necessitated his re-admission. Complete subjective well-being, with a desire to reason and criticise,

highest degree of muscular restlessness, destructive and filthy. After nine months he became quiet. He was then greatly emaciated, but quite muscular; skin a dark yellow-

ish-brown, hair short, dry and curly.

The 22nd of January, 1886, he was tried out of his room, but the next day began a series of troubles which quickly confined him in bed again. Latterly he had suffered from some cough and purulent expectoration, which increased; and on the 24th he presented symptoms of consolidation in right inferior scapular region, without, however, crepitation, or blood in the expectorate. The same day, severe diarrhea and an acute arthritis of left knee, with considerable swelling appeared, to which was added the next day a considerable redness and swelling of the leg and foot. On the 26th was observed an advanced paresis of both hands. This trouble was, however, of older date than the others, as it had been noticed fourteen days previously that his former beautiful "office hand" had become uncertain and irregular in his letters, and the attendants reported that they had been compelled to feed him the last few days, as he could not raise the spoon. The paresis developed rapidly and consisted of: Paralysis. of the extensors of both forearms, so that the hands dropped down limp when arms were raised; paresis of the flexors, so that the hands could not close completely and the grip very weak; slight paresis of the muscles of arms and shoulders; all movements of elbows and shoulders executed freely, but with little power. Hands always cold, with a bluish redness, which could be easily caused to disappear on pressure. The paretic muscles seem to get smaller every day; electrical contractility through the radial nerve increased—through the median, weak; applied to the muscles directly, the induced current gave weak contractions—the constant, on the contrary, strong contractions, and anode-closure equally as powerful contractions as cathode-closure. Not the slightest pain or paræsthesia present; sensibility of the skin intact; no tenderness along the nerve trunks. The power of lower extremities perhaps somewhat lessened, otherwise nothing abnormal. Psychically unchanged. The restlessness, which had always been greatest in the arms, continued; he kept throwing his limp hands about constantly. January 28th, all the troubles were developed, and the diagnosis was: Poliomyelitis anterior subacuta, right broncho-pneumonia, acute intestinal catarrh, arthritis of left knee, and diffuse phlegmon of left leg. The course of the different processes will be

given briefly, each for itself:

Pareses improved quickly. February 6th, the muscles showed better contraction than before on direct faradization, while the nerves were still non-responsive. After this, improvement was constant, so that on March 8th, he wrote with a lead pencil a long and well written letter. Electrical contractility advanced much more slowly, but followed after a time. In the course of the spring he could use his fingers freely, but his grip remained weak. Muscular restlessness unchanged; he did all the mischief possible with his hands. Pneumonia: February 6th is recorded, that the bronchial respiration is softer, and following this also some advance in the subjective symptoms; but there was, during the remainder of his life, signs of a stationary consolidation posteriorly and inferiorly in the right lung, some dyspnæa and cough, with tough purulent expectorate in great quantity. The diarrhea which on the first few days was very severe also ceased on the 6th of February; but it commenced again after a few days and continued despite manifold remedies, with varying intensity until March 8th, when we were able to discontinue medication. April 24th it recurred contemporaneously with an extensive erysipelas of left lower extremity, watery discharges with an intense odor occurring; it disappeared with the erysipelas in the course of six days. After this, normal discharges. The arthritis of left knee lost its acute impress in the first half of February, its injection, heat and tenderness, disappearing; it now assumed the character of a tumor albus; puncture and aspiration gave a negative result. Movements of the joint now became very painful, and on the 14th of April, osseous grating could be felt; later some backward subluxation occurred (limb was kept extended in a splint). Perforation of the capsule could not be demonstrated. The diffuse phlegmon began, as stated, on the 27th of January. There was swelling at the upper part of left leg, skin red and glistening. The swelling spread rapidly down the foot, and on the 30th of January upon the thigh, at first up to the perinæum, but soon localizing itself to the lower half. February 2nd two incisions were made on the inside of leg with a free discharge of thin pus. After February 6th, when there was a diminution of all the troubles, the discharge of pus also decreased and ceased completely on the 12th; the phlegmon of leg seemed about to get well, but now appeared a very

considerable ædema of both feet, less in the right. Repeated examinations of the urine failed to discover anything abnormal. At the close of February the phlegmon increased on the thigh, and deep abscesses formed, necessitating incisions; at the same time the outflow of pus began again from the incisions in leg, and near the foot was opened a depot of dark, blood-colored pus, mixed with old coagula: later large shreds of connective tissue were discharged from here. Drainage tubes were inserted in many places, and suppuration continued with varying intensity through the succeeding months. In the latter part of April erysipelas attacked the whole limb, running its course in about one week, and not influencing the general condition. In July foul-smelling pus was emptied from an incision on inner surface of thigh. July 28th this pus seemed to come from the popliteal space and an incision was made here and a drainage tube inserted between the two incisions. July 31st, immediately after the daily washing out, a severe arterial hemorrhage occurred through this drainage tube, under which the patient fainted. Hemorrhage was controlled by a tourniquet but recurred several times the next day. The patient would not hear of amputation, and on the 1st of August the femoral artery was ligated, â la Scarpa. This stopped the bleeding completely, but for only twenty-four hours, when it again began, necessitating the application of the tourniquet. This caused pains in the extremity, dyspnæa and collapse, so that the artery could not be completely compressed, and the tourniquet had to be loosened every little while, allowing some oozing to take place each time. On the 3rd of August, while preparations were being made for amputation in spite of the patient's refusal, he died.

Autopsy.—Body emaciated. Universal anæmia. Cranium well formed. Bones greatly thickened with osseous deposits on the internal surfaces, greatest on os frontis, less on the parietal bone. Diploë very sparing. Dura natural; subdural fluid increased. Arachnoid slightly milky, and lifted up by a clear fluid at the anterior two-thirds of its convexity, while posterior third is normal. The changes are most marked over gyri centrales and posterior ends of frontales. Brain surface richly folded. At the boundary between parietal and occipital lobes there is a light depression, the gyri in front of this are swollen and soft to the touch, while back of it they are

firm and flat. Weight, 1480 gm. Medullary substance somewhat firmer than usual. Ependyma smooth, no fluid in the ventricles. Otherwise nothing abnormal. Heart: Left ventricle hypertrophied; valves normal. Left Lung: Lung tissue inferiorly very hyperæmic and dark, but everywhere containing air. Right lung adherent posteriorly so that it cannot be removed without tearing. Upper and middle lobes healthy; lower lobe entirely destitute of air posteriorly, tissue lax and a reddish-brown; anteriorly it retains the same color, but contains air and ædema. Bronchial mucous membrane in both lungs darkly injected, and covered by a thick layer of purulent mucus. Liver of natural size, edge very sharp, with a connective tissue margin; tissue pale, reddish yellow. In the gall-bladder a couple of large calculi. Spleen of natural size, somewhat lax. Kidneys also very pale, capsule strips off easily, corticalis of natural thickness. Stomach dilated; intestines very anæmic, otherwise healthy. Left knee joint: Patella grown fast; disseminated caries of femur's and tibia's articular surfaces; thickening of the capsule, but no pus in the articulation. On the inner surface of thigh, the incision leads to a cavity directly over the knee, filled with old coagula; its walls have a dark gangrenous color. From this, a wide passage leads to another cavity in the popliteal space, the walls of which, as well as the contained arteries being gangrenous; the popliteal artery is especially dark and brittle, this ceasing, however, sharply where it becomes the femoral; an opening in its walls could not be demonstrated with certainty. Os femoris not denuded beyond the articulation. At the lower part of leg the incisions of both sides lead to a small pus-depot, and from here up toward the knee the

muscles are brittle. Neither tibia nor fibula denuded.

Microscopical Examination.—Spinal cord.—Congenital abnormalities. The triangular tract and the diffuse formation of fine fibers in antero-lateral columns very prominent. Acquired abnormalities consist of partly a diffuse, partly a more localized affection. The first shows itself by (I), thickening of pia, rich pigmentation throughout, in many places adhesion to the cord, vessels enlarged, tortuous and thick-walled; (2), the enclosing layer of cord thickened nearly everywhere, least in the portion corresponding to the situation of the direct cerebellar tracts; (3), a diffuse increase of the interstitial tissue in the white fibers, enlarged reticulum-cells, their processes thickened,

and the perpendicular fibers' number increased. Vessels thick-walled with thickened sheaths. In the cervical region it appears as though there was a special sclerosis of the lateral pyramidal tracts and the columns of Goll, but a more minute examination reveals that this is no system disease, at the most, only a local increase of the diffuse sclerosis; this disappears from the pyramidal tract at the third cervical nerve, where the tract prepares for crossing, and downwards, it disappears entirely where the connective tissue hypertrophy reaches its highest development at the upper part of dorsal region, from both the named tracts. The hypertrophy diminishes greatly below the seventh dorsal nerve, but in the lumbar region, especially in the posterior half of the cross-section, it is again quite prominent. The interstitial changes are as a rule so light that they do not alter the appearance of the nerve fibers appreciably; only uppermost in the dorsal cord are spots where the coarse nerve-fibers are degenerated, their marrow becoming reddish and the axiscylinders indistinct. These spots are especially in the mixed lateral column zone. The localized affection is an inflammatory process in the gray mass, extending from the fourth cervical to the seventh dorsal nerve and shows itself by the following changes: Vessels in the septum anticum greatly dilated; in places a solid wall of connective tissue quite filling the fissure and its posterior enlargement. In the gray matter the vessel-trunks also dilated and the pia-sheaths thickened; in the anterior horns the capillaries increased in number and walls thickened; the two symmetrical vessel-canals in the commissure, and the large vessels going out from them, are surrounded by fibrillar connective tissue resembling the ordinary interstitial tissue of the cord, only coarser-fibered and containing a number of the so-called "arachnider;" this connective tissue is found in considerable quantities localized, is thickest near the commissure at the boundary between the anterior and posterior horns, where it is in intimate relation to the "ependyma fiber," yet not forming a continuation of it, and the latter not changed pathologically. From this station, newly formed connective tissue extends in various directions with the vessels, some directly outwards to the lateral columns, some forwards and outwards along the inner margin of the anterior horns, and some backwards in the anterior part of the posterior horns. In the anterior horns are the following changes:

Development of fibrillar connective tissue with "arachnider," but only around the larger vessels; increase of the small round nuclei, especially in the perpendicular bundles of medium-sized nerve fibers that are found in great number in the anterior horns; thickening and deeper coloring of the axis-cylinders of the larger nerve fibers, both in bundles and lying singly, and finally, changes in the ganglion cells. These are greatly pigmented throughout the whole cord, but in this portion, between the fourth cervical and seventh dorsal, they are also shrunken and distorted, nuclei indistinct or absent, processes thin, short and tortuous or entirely absent, and the cells then simply a lump of pigment. Their number somewhat lessened. It must be added that where the disease changes are greatest in the anterior horns, there is a margin, corresponding to about half of the white columns, where the reticulum cells are greatly swollen and the axiscylinders of the coarser nerve fibers thickened and more deeply stained. In the posterior horns, the columns of Clark, which lie close by the diseased portion in the central part of cord, show like changes as in the anterior horns; namely, nuclear proliferation and disappearance of the ganglion cells. At the same time there is disappearance of the perpendicular fibers. They color red in carmine and disappear between the nuclei and connective tissue, so that the characteristic appearance of the columns is lost. This applies principally to the left side, which, in the uppermost half of cervical region, is often only indicated by a couple of rudiments of ganglion cells. The cells of the tractus intermedio-lateralis are also similarly affected. The remainder of the posterior horns is healthy. Concerning the intensity of the process, it is mainly symmetrical, with the exception of the columns of Clark, as stated, on crosssection; longitudinally, however, it is variable; at the second and third cervical nerves it is very weak, at the fourth suddenly much stronger, and the ganglion cells greatly affected; at the fifth cervical it diminishes again, but at the sixth and partly the seventh, the process reaches its maximum in all respects; at the eighth cervical again weaker; at the first dorsal an increase; below this it diminishes gradually, and under the seventh dorsal, the anterior horns and columns of Clark are both normal. The motor nerve roots corresponding to the seventh cervical nerve show no interstitial changes, but numerous diseased nerve fibers. In some of them the medulla is

slightly red-colored and has lost its annular structure, while the axis-cylinder is normal; in others the latter is thickened up to ten times its normal thickness, the medulla becoming thin and finally disappearing. In other bundles no thickened axis-cylinders are visible, but numerous (even half of the bundle) reddish fibers are present; in still others are thick axis-cylinders, while the red-colored fibers are scarce. Besides, between the nerve fibers are small round bundles, composed of delicate nerve threads, reddish-colored but otherwise normal; the whole bundle but very little thicker than a coarse nerve fiber. Between the individual threads are connective tissue nuclei, resembling those in endoneurium, but no interstitial tissue. (Newly formed nerve fibers. Westphal.1 Ziegler.2) Radial nerve: No changes in the connective tissue. In the walls of the vessels slight deposits of nuclei. Cross-section of the bundles reveals small irregular spots, red-colored, and in these are fine nerve fibers resembling those in the motor roots but surrounded by more connective tissue and not forming the well-defined round bundles. For the rest the nerve fibers are healthy. Muscles: Extensors of left forearm. Simple atrophy and interstitial hypertrophy with deposits of pigment. All the muscular fibers are striated longitudinally, some to a very considerable degree; nearly all are smaller than normal, many very small and not well defined. In the majority considerable proliferation of the nuclei; large and round, often in groups, they are disposed variously, some, surrounded by protoplasm, occupy the margin of the fibers, appearing like small protuberances. No trace of fat deposition. Blood-vessels empty; in many, great development of nuclei surrounded by young connective tissue filled with large, oval nuclei. In the connective tissue are collections of yellowish-brown pigment, from small granules to larger lumps, irregularly massed together and held by a structureless substance. Liver: Interstitial hepatitis. Between the cell rows, small, round nuclei in various quantities; around all the vessels great nuclear proliferation; it is most prominent about the small vessels, all of which lie in connective tissue islands, thickly infiltrated with the small round cells. Kidneys: Great development of interstitial connective tissue from the surface to the

Westphal: Ueber eine Verænderung des Neiv. rad. bei Bleilæhmung.
 Archiv. f. Psych. IV., p. 776.
 E Ziegler: Lehrbuch der pathologischen anatomie, II., p. 706.

pyramidal apices, in such a manner that the youngest is at the first named, the oldest at the last named place. It is greatest about the vessels and glomeruli; corticalis very rich in large oval nuclei, especially thick under the capsul and extending irregularly, so that a whole field can be composed of nothing but young connective tissue and only remnants of canals and epithelia; in the pyramids the connective tissue is more organized, the nuclei fewer, and extends as septa between the straight tubules; yet here also are spots of pure connective tissue. A number of the canals are destroyed, but the remainder have a very natural appearance; the epithelia have distinct nuclei and are situated in rows along the walls; in some of the straight canals there is yellow pigment, from small granules to larger concretions lumped together along the walls; in a few are colloid masses; the vessels so empty of blood that only the largest are visible.

There cannot be much doubt but what the spinal affection just considered is Duchenne's "Paralysie générale spinale antérieure subaigue," or as the Germans call it, poliomyelitis anterior, and especially its subacute form. The "slack" paralysis, the speedy muscular atrophy with reaction of degeneration, the complete absence of diseased sensation, as well as of disturbances of the vesical and rectal functions, and "decubitus" renders the diagnosis certain. It is a little unusual for the disease to begin in the upper extremities and remain localized there, but it is not unique. Erb1 states that he has seen two cases in which the affection must be considered as limited to the cervical marrow alone. The clinical diagnosis is besides substantiated by the anatomical find, which in my opinion must be interpreted as partly a chronic affection, a diffuse sclerosis of the white columns, which, as it only in a small degree affected the nerve fibers, did not give symptoms, and partly as the remains of a more acute inflammation of the gray mass in the cervical enlargement and upper part of the dorsal cord, which led to connective tissue hypertrophy in the anterior horns and the columns of Clark, with destruction of some ganglion cells and

^{1.} W. Erb: Krankheiten des Rueckenmarks, p. 720.

considerable nutrition disturbances in others, while a number were left uninjured. Secondarily was added hereto, atrophy of nerve and muscle fibers with interstitial connective tissue development in the muscles, yet the processes had about run their course and the work of reparation was begun.

The clinical picture of this spinal trouble reminded one of "lead paralysis," with its relaxed, bilateral paralysis of the extensors, and whose anatomical cause is nowadays also sought in poliomyelitis anterior; but in this case poisoning could not be talked of, and the well-known line on the gums was also wanting. E. Remak, in his interesting researches on lead paralysis, has found that also in the non-toxic poliomyelitis the same functionally associated muscle groups are affected and in the same sequence as in lead paralysis. I have thought that the cause in our patient perhaps could be sought in the unusually protracted and incessant use of the upper extremities, especially the fingers. In almost nine months they hardly ever rested night or day, tearing up the strongest stuffs, picking and rubbing constantly. This need of movement was probably due to an irritation of the cortical centers (also borne out by post-mortem appearance of brain). The movements always possessed the impress of spontaneity. By this constant cerebral impulse the spinal centers' were kept in constant activity with functional hyperæmia; and this may perhaps have been the cause of the inflammation around the vessels, especially as the cord previously was not normal. The thus induced poliomyelitis could have received an acute impetus by the exposure consequent upon taking the patient out of his room in January, after long confinement. Simultaneously four other inflammatory conditions

^{1.} Remak: Zur Pathogenese der Bleilæhmungen. Archiv. f. Psych., Bd. 6, p. 1.

^{2.} If we compare the different degrees of paralysis in the various muscle groups with the degrees of intensity of the myelitis in the different spinal segments, we find that the forearm's extensors correspond to the sixth cervical nerve, thenar muscles to the first dorsal, and the flexors of the arm to the fourth cervical nerve, which corresponds to Remak's pointing out of the spinal centers for the various muscle groups. (See Archiv. f. Psychiatrie, Bd. 9, p. 561 and 574)

arose in other organs; and the question arises, have these affections an inner connection? That which speaks for this is the simultaneous appearance, the great acuteness in all, and their partially corresponding course. In the last named regard the intestinal affection most nearly followed the spinal process. When this was at its highest the diarrhea could only be transitorily influenced; only when the paralysis definitely improved did the diarrhea cease quickly without any extraneous influence allowing itself to be proven. If there be a connection between the spinal and intestinal affections it would soonest be thought to be brought about through the splanchnic nerve, which conveys the intestinal vasomotor as well as motor nerves, and whose fiber's spinal origin is in the upper part of the cervical cord, consequently in the diseased portion. I shall not attempt to explain the modus operandi of this action, but here, as elsewhere, be content with pointing out the anatomical relations. The intestinal trouble was, from its symptoms, catarrhal, and could disappear without leaving traces. The lung affection, on the contrary, had a more decided inflammatory character, and when the paresis improved and diarrhea ceased, it simply entered a chronic stage, which led to a transformation of the attacked portion of lung tissue into connective tissue that adhered to the thoracic wall. There is a direct nerve connection between the lungs and the diseased portion of the cord, in that the greater part of their vessel nerves leave at the lower part of the cervical region; but why the process was unilateral we have no explanation of. In the marasmoid insane interstitial connective tissue development in the lungs is frequent: it leads to bronchiectases. Perhaps such would also have appeared here, had the patient lived longer; but these are nearly always bilateral and symmetrical. The arthritis also began acutely, and became chronic at the same time as the preceding, leading to thickening of the capsule and caries of the joint surfaces without pus formation. That joint affections can

^{1.} Landois: Lehrbuch der Physiologie des Menschen.

develop under affections of the central nervous system is well known, hemorrhages into the articulations as well as different forms of arthritis. These last have been especially considered by Charcot, who distinguishes between arthritis from local brain lesions, acute myelitis and tabetic arthropathies. The first which especially interest us here are ordinary acute arthritides. He gives several examples, among which one by Gull resembles ours, in that there was arthritis of one knee joint with a central cervical myelitis, when the paralysis began to reach the lower extremities. Charcot states here that the arthritides appear simultaneously with other trophic derangements, when the muscles begin to atrophy, and the acute decubitus forms. In reference to the tabetic arthropathies he expresses the opinion, based on two "section-finds," that the joint affections appear when the pathological process attacks the anterior horns. This opinion he has latterly not sustained, and Westphal2 does not sustain it, so that I shall not delay with it, except to remark, that besides this case it could accord with the only similar case I have seen reported recently, one of Vallins³: In an acute myelitis there developed rapid cedema of the paralyzed lower extremities, swelling of the knee joints, decubitus, etc.; in one knee there was only hydrarthrus, in the other, suppuration; in the sacral canal, pus, in the spinal cord, discoloration of the gray substance, especially twelve to fifteen cm. above the origin of the cauda equina, and microscopically was found destruction of the majority of the ganglion cells in the anterior horns, and slight nuclear proliferation in the white columns, especially the posterior columns. Severe lesions of the anterior horn-cells in the dorsal cord, were present, as in ours, with an acute affection of the knee joint; but why the two knees in neither of the cases were not similarly affected we receive no explanation of. Finally, in regard to the diffuse phlegmon, which included the leg and lower half of thigh, it must first be remarked

Op. cit., p. 111.
 See Archiv. f. Psychiatrie, Bd. 9, p. 717.
 Virchow u. Hirsch: Jahresbericht, 1878, Bd, 2., p. 120.

that it developed independently of the knee trouble, in so far that it was not caused by perforation of the capsule and pus extension. It began in the first days of the knee trouble, and affected the subcutaneous tissue of the leg first, lastly attacking the thigh, and here only was there suppuration between the muscles. Periostitis or osteomyelitis there was not. Its dependence on the marrow affection is spoken for, as in the other affections, by its appearance simultaneously with an exacerbation of this, and that it showed a tendency to heal when the myelitis became better. However, it did not heal, but like the arthritis, became an independent affection which ran its course independent of the condition of the cord. This does not militate against the surmised neurotic origin; because if the trophic neurosis is of such a nature that it produces inflammation-awakening agents, these must be capable of pursuing their activity regardless of how they came there, and regardless whether the first cause continues to act or not. From the course of the trouble it must be remarked, that by the incisions lowest on the leg was emptied, together with pus, old coagula which must have come there by a spontaneous hemorrhage, as there was no contusion; and further, that in the walls of the abscess cavities in thigh, and especially in the popliteal space, gangrene occurred, which also attacked the walls of the popliteal artery and led to the terminal hemorrhage. Consequently a tendency to hemorrhages in the subcutaneous tissue and to gangrene, are found in this case as in Case-history II., and which are likewise characteristic of acute decubitus. These inflammatory processes were unilateral, while the spinal affection was bilateral and symmetrical; only in the columns of Clark was there a difference in the two sides, in that the same side (left) showed a severer myelitic process and greater destruction of ganglion cells. How far this asymmetry can have significance we will see later on. Of bilateral acute skinaffections we had an ædema of both lower extremities, no explanation of which was found in the condition of

the other organs, wherefore we must ascribe this, as well as the ædemas before considered, to the myelitis; likewise the vasomotor derangements in the upper extremities. Of chronic nutrition-disturbances we found in this patient pigmentation of the skin and changes in the hair. Unfortunately it was forgotten at the autopsy to remove the sympathetic, so that nothing can be said about its relation to the pigmentation; we also found again chronic interstitial nephritis and hepatitis, but these had not given symptoms.

Ere we leave this case I will add that not long since I saw a complexus of symptoms that reminded me much of the case just related. The patient was a 58-year old female, not insane, but who for two years had had frequent attacks of fear with palpitations, sensations in the præcordium, cerebral congestions and vertigo; no morbus cordis, slight chronic bronchitis; a diffuse phlegmon affecting the whole of left upper extremity from the middle of arm to the tips of the fingers, together with a severe diarrhea and a light left broncho-pneumonia; all three developed the same day and ran a like course. There was, also from the first day great mydriasis of left pupil and attacks of palpitations; congestions of the head and profuse sweating of the head and neck were frequent; the two last symptoms were bilateral. After six weeks' suppuration all the troubles vanished, but there remained for about two months afterward in the arm, great vasomotor disturbances and severe pains, which rendered her sleepless. disappeared under applications of the constant current. The pupillary dilatation of left eye would point to the left sympathetic as the seat of disease; and from the upper thoracic ganglia we have also fibers going to all the attacked parts, dilators to the pupil, sweat and vessel nerves to the head, accelerators to the heart, and vessel nerves to the lungs, intestine and upper extremity; but as the cranial vessel dilatations and the sweating was bilateral, a disease of the left sympathetic would not explain the symptoms, but we must rather assume a slight, circumscribed myelitis in the upper dorsal cord, where these fibers take their origin. The myelitis in this case must have spared the musculo-motor elements and affected only the sympathetic and sensory.

In giving the results of the sections so extensively the purpose has been twofold. In the first place, I have desired to show in how many parts sections must be made in the insane if a satisfactory conception of their condition is desired. The related sections cannot be presented as models. They all have essential defects, but together, they do give the impression that it is not a question of disease in only one organ, but that here we have a degeneration along the whole line-everywhere a destruction of functional tissue, and it is my hope that colleagues in these institutions in them will find an incentive to examine other parts, and not to lay the whole stress on the condition of the brain in their autopsies. Other organs also have a claim to be considered, even though they did not furnish prominent symptoms during life. Thereby we may perhaps be led to a better solution and interpretation of the many, more or less vague, symptoms that are now summarily put down to the account of the psychosis; and again, through this to come to a clearer understanding of the elements that compose the insane condition. For the second, it has been, as previously stated, my intention to add material to the (for pathology) important question of trophic neuroses. To get at the bottom of this it is necessary to have thorough examinations of as uncomplicated cases as possible. In both respects our Case-histories leave much to be desired; but there is perhaps something useful in them, and in conclusion we will therefore review them briefly.

The authors who have given this matter some attention are very reserved in their expressions concerning the localization of the trophic centers, because we have not yet passed the stage of conjecture. Samuel accepts that the center for skin affections, which we have especially

^{1.} Op. cit., p. 330.

concerned ourselves with here, is in the spinal ganglia; and Charcot1 does not deny the possibility that trophic derangements may result from changes occurring in these as well as in the peripheral nerves; but he does not consider them centers. (Unfortunately our sections do not add anything to this question, as none of the spinal ganglia were examined. In our method of removing the cord these are not included.) Charcot points out the cord itself as the starting-point for the lighter skin affections to his "faisceaux radiculaires internes," and for acute decubitus the central portion of the gray matter and the posterior horns. Erb 2 agrees with this in the main. If we now wish to examine what our five sections teach us it will be seen that we can only expect enlightenment from the signification of the cord, as this alone was examined in all the cases. This forms however, in this regard, a very homogeneous material. When we placed the last two Case-histories by themselves it was because they indicated by motor symptoms during life, the presence of an acute spinal affection. While in the three preceding, section revealed the presence of such an one, the last had not made itself known by the ordinary signs during life. In them all was found. partly, a lighter chronic disease of the cord, partly one or more foci of acute origin. With the last we will compare the acute trophic neuroses, looking away from the chronic nutrition disturbances, and the chronic diffuse cord changes, together with the affections of the peripheral nervous system.

In all the five cases the gray matter is affected; in one case (V.) also the posterior columns and one antero-lateral column; in one (IV.) also the posterior column alone, and in three (III., VI. and VII.) none of the white columns were especially affected by the acute process (in Case-history IV. were two foci, a transverse myelitis cervicalis and a poliomyelitis lumbal; the last we believed had to do with the trophic neurosis). It is therefore only within the gray

^{1.} Op. cit., pp. 79 and 108.

^{2.} Op. cit., pp. 133 and 138.

mass that the starting-point can be sought, and to facilitate this, we will divide the gray mass into three portions, the anterior horns, the central portion (including the columns of Clark) and the posterior horns. We find then: In one case (VI.), all three portions attacked; in one (VII.), the central portion + both anterior horns; in one (V.), the central portion + one anterior horn; in one (IV), the central portion + one posterior horn; and finally, in one case (III.), the central portion alone. We are thus referred to the central portion of the gray mass as the important locality. This is the same that Charcot has pointed out with reference to acute decubitus, which also speaks for the near relationship between this, the erythemata, and the phlegmons. On the other hand, it is a striking fact that in none of these cases did we have the acute decubitus; the cause may be sought either in the position of the disease with reference to the long axis of the cord, or in the nature of the disease. Decubitus can result from a lesion of the cervical cord; but according to statistics given by Ashhurst1 the frequency of decubitus increases the farther down the cord the lesion exists, and in three of our five cases the myelitis was in the upper half of the marrow; and secondly, the acuteness of the lesion seems to play a rôle. Acute decubitus is especially frequent after fracture or luxation of vertebræ, or hemorrhage into the cord (intramedullary), and in comparison with these even an acute myelitis is a tardy process. To the central portion of the gray mass I have added the columns of Clark because by their situation close to the diseased part, they, as a rule, suffer the same fate as it. The question then becomes, is it the cell-group of Clark, or the remainder of the central portion with the contained small ganglion cells, that is the starting point? as in all the five cases both segments were affected, these sections give us no answer to this. To throw more light on this point, I went over twenty other sections of the cord in non-paralytic insane, the

^{1.} See Charcot, a St. 1, p. 98.

result of which was that in five cases were found besides a diffuse, one or more focal affections that also attacked the gray mass; in fifteen cases, on the contrary, only diffuse disease. Among the five cases were two in which the columns of Clark were included in the process as in those given above, only that the disease changes were more slight. As supplementary, I shall relate these briefly:

- I. Male, æt. 28 years, died marasmoid; in the last two months transitory cedemas of face and an eruption of small papules on breast and back; at the third and fourth dorsal nerve softening of the whole "central portion," but least marked in the columns of Clark.
- 2. Male, æt. 22 years. Erythema nodosum very great on the legs, weak on the hands, continually recurring for three months. Under this a phthisis developed. Died six months after beginning of erythema. Softening at fifth and sixth dorsal nerves; in the columns of Clark great vascularization, nuclear proliferation and great cloudiness of tissue.

In the three other cases there was also softening in the central portion, but it spared the columns of Clark, and there had been no affections of the skin. This relation indicates that the columns of Clark is that portion of the central part from which trophic neuroses are called forth. In the remaining fifteen cases where no focal processes had existed, there had not been any skin affections. The columns of Clark were often included in the diffuse processes, and these were in many cases considerable, e. g., granular disintegration of all the connective tissue in the gray matter, so that the opinion just expressed may seem hasty. It is not so for this reason —the elements of the spinal cord will tolerate astonishing changes without giving conspicuous symptoms if only the changes have come on slowly and the continuity of the conductors is not broken. The significance of the columns of Clark is also made manifest by the fact that in VII. the column of the same side (left) was most

affected. This is the only instance in which an asymmetry can be shown, otherwise the cord affection was of about equal intensity on both sides, while the trophic neurosis was disposed differently on the two sides. Lesser differences in the pathological process of the cord may have existed; they are difficult of demonstration; e. g., in VII. the paralysis in the left upper extremity was greater than in the right, but the most thorough search could not discover a difference in the poliomyelitis of the motor portion of the two sides. The physiological import of the columns of Clark is quite unknown. The only reference thereto that I can find is in Vulpian,1 who states that Jakubowitsch views them as collections of sympatheticus elements in the cord, so that from these issues the influence which the spinal cord exerts on the organs innervated by the sympatheticus. Upon what this view is based Vulpian does not state. Perhaps it is because the area of origin of most of the vessel-nerves that go to the sympathetic, corresponds to the extent of the columns of Clark—he simply dismisses it thus, it has not been accepted. In their anatomical relations the ganglia of the columns seem, according to Flechsig's2 researches, sustained apparently also by direct observation, to belong to a system of fibers, whose peripheral portion passes through the posterior roots, while the central subdivision passes up in the direct cerebellar tracts; but whether they really are a part of such a probable centripetal tract or not, is not yet decided. To a comprehension of the columns' import this does not contribute. With Jakubowitsch's interpretation the result we reached above would tally quite well. We have now endeavored to find the starting-point of trophic neuroses in the transverse section of the cord. We will now seek for their seat in the long axis in relation to the situation of the trophic neuroses in the periphery. That a definite relation exists between these two is a necessary

^{1.} Op. cit. 1, p. 196 2. P. Flechsig. Die Leitungsbahnen im Gehirn und Rückenmark des Menschen. 1876. P. 294.

assumption on viewing the individual cases. Through comparison we will endeavor to discover the rule, but as the cases are so few we can only expect to find the outline of this. In connection with this exists the question as to whether the pathological process in the cord must act on its peripheral elements to call forth trophic disturbances, that is, on the nerve roots intramedullary part, or, which in this connection must be added, the corresponding ganglion cells; or whether trophic neuroses can arise from an action on central elements, that is, on the cord's own conducting paths. If we go over our material with this purpose in view, we find, from above downwards, (1), softening in the lower cervical and upper dorsal gave ædemas of face, hands and feet, together with circumscribed phlegmons of the forearms (III.); (2), softening at the first dorsal nerve, losing itself toward the middle of the dorsal cord and greatest on the right side, gave erythema with gangrene on right arm and diffuse phlegmon of the thigh, extending down the extremity (V.); (3); sclerosis from the fifth cervical to the sixth dorsal nerves, with a preponderance at the left column of Clark, gave diffuse phlegmon from the middle of left thigh downwards, and cedema of both lower extremities (VII.); (4), softening at fourth cervical and seventh dorsal nerves, and especially at the twelfth dorsal, gave ecthyma postules and furuncles, distributed over both lower extremities, a small circumscribed phlegmon on right thigh, and great erythema on left leg (IV.); and finally, (5), softening at the fourth and fifth cervical nerves, and at the transition to the lumbar cord, gave an eruption of hemorrhagic papules on the whole body (with œdemas) and diffuse phlegmon of left leg (disappearance of œdema in right) (VI). This comparison, consequently, gives the following rule with reference to the relation between the disease in the cord and the seat of the trophic neuroses of the skin, designating the cord segments by the from them springing nerves: Lower cervical and upper dorsal nerves

correspond to the face and upper extremities, the succeeding dorsal to the femur, and the middle of dorsal marrow to the leg; the lower, dorsal and the lumbar nerves to the leg and foot. The two cases (p. 59) briefly referred to, harmonize very well with this rule, as it is in unison also with what we know of acute decubitus. It can arise in lesions of the cervical cord at least in its inferior portion; but according to Ashhurst's previously mentioned statistics it is very rare (found only in 1.4 per cent. of the cases); on the contrary it increases in frequency downwards through the dorsal and lumbar cord (from 9.2 to 12 per cent). If this rule be right in its outlines, it does not correspond to a conduction through a diseased member's sensory or motor nerves, nor to a conduction through the long intramedullary tracts; the relation of the central to the peripheral affection is, so to speak, not transverse enough for the first-named conduction, and not longitudinal enough for the last named. It seems that the influence must act on the peripheral elements, and these must have, for the upper part of body, a more or less ascending course, and for the lower part a steep descending course, before they can reach the appertinent part of body; in other words, their course must be similar to that of the vasomotor nerves, which spring from partly below the motor and sensory nerves, for the upper part of the body, and, partly, much above these for the lower half, in order to reach their destination through the sympathetic. It is striking that the severe trophic neuroses is always found on the extremities; on the trunk we have only met with ædemas, papular eruptions and similar troubles. Acute decubitus is, however, an exception, as its favorite seat is the sacral region and nates, so that these, in this regard, seem to belong to the extremities. This relation of the trophic neuroses suggests the vasomotor derangements which are always greatest in peripheral regions. The form of the cord affection does not seem to have any essential signification for the trophic neurosis. In

four of our cases the disease led to softening, and in one to sclerosis of the gray matter, but the trophic disturbances were essentially the same. Case III. forms, perhaps, an exception, these showing themselves partly as ædemas, partly as circumscribed phlegmons on both forearms, while in the other cases they were diffuse erythemata and phlegmons. It is to be remarked, however, that in case III. the cord affection differed from the others somewhat, consisting of a cavity-forming softening at fourth to the eighth cervical nerves. Here the chronic myelitis culminated, and there was not, as in the other cases, signs of an acute process. III., both in the cord affection and the trophic neurosis, resembles most the two supplementary cases related on page 59. Perhaps, then, there exists a certain relation between the acuteness of the spinal disease and the form of the trophic neurosis. It has already been mentioned that acute decubitus, the most rapidly destroying form of the trophic neuroses, is especially related to the violent affections of the central nervous system, such as hemorrhages and direct lesions; the slower acting acute myelitis, perhaps, gives the to acute decubitus nearly related, but less destructive, phlegmons and erythemata, and the more chronic forms of myelitis, the lighter forms of trophic neuroses, such as circumscribed phlegmons, furuncles, etc. This is, of course, only a supposition and needs further proof, but it is in harmony with the strongly maintained views of Samuel and Charcot, that it is irritation and not paralysis of the nerve elements, that calls forth the trophic inflammations.

In my oft-mentioned monograph on the vasomotor nerve tracts, I referred the vessel nerves for the distal parts of the body, to the anterior mixed zone of the lateral columns, and by comparing forty-seven examinations of the cord in insane, I found that the finer and less developed these presumed vasomotor fibers were, the more pronounced were the nutrition disturbances in the patients, partly as ordinary marasmus,

partly as degenerations in the most diverse organs. In this reference there is no averment that the vasomotor nerves are also trophic nerves; experiments seem to speak against it. But as vessel innervation surely is an important agent in the regulation of nutrition, a reizbare Schwache in the vasomotor system would be able to cause changes in the condition of nutrition, even though the nervous system's trophic powers in and for themselves are sound.

It is possible, and may be probable, that, as previously expressed, if there are special trophic nerve fibers, they take their course in the same tract as the vasomotor fibers, and, perhaps also, that in the insane they are likewise in a weakened state. Concerning this nothing decisive can be said. But even should it be so, this reference of a relation between the anterior mixed zone of the lateral columns and nutrition disturbances, is not at variance with the result arrived at in this discussion—that the local affections of the skin seem to be initiated by changes in the columns of Clark. A weakened condition of the elements of a system is no acting cause; an irritant is necessary, which must act on the system, in order that symptoms shall appear, and this must occur at a place that is receptive of influence; and this, as is known, every portion of a tract is not. Under the assumption that both of the references spoken of are correct, the relation between them can be expressed thus: The fineness of the fibers in the anterior mixed zone of the lateral columns indicates a reizbare Schwache of the system, while the columns of Clark is the receptive point for irritants—that place from which the activities of the system are released.

Spinal Irritation and Some Points in the Diagnosis of Affections that may be Mistaken for It.*

By J. T. Eskridge, M. D., Denver, Colo.

IN considering the subject which forms the title of this paper, I desire to call attention to some points in the differential diagnosis of certain diseases of the spinal cord and its membranes, and of caries of the spine. organic diseases of the cord and surrounding structures, in the vast majority of instances, are easy of recognition, but functional disturbances in this portion of the body are common and often confusing, and, occasionally, the symptoms of an organic lesion are illy developed, or masked by those of other affections, it may be, in a distant portion of the body. Chronic degeneration (system lesions) of the cord are rarely difficult of recognition, but a formidable array of symptoms, supposed by some to be due to anæmia of the cord, and by others, to anæmia or congestion of the cord and adjacent structures, at one time nearly resembling gross organic lesions, and at another being easily accounted for on the theory of temporary perversion of function, are confusing and most sorely tax the skill of the diagnostician.

It is probable that straining or tearing of the ligaments of the spinal column may result in beginning caries, and caries in turn in inflammation of the spinal dura. The

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irritation may extend directly from certain ligaments to portions of the dura mater, especially to those portions of the membrane which surround the spinal nerves in their passage through the intervertebral foramina. In such cases it is often difficult to determine whether we have a spinal pachymeningitis, secondary to caries, or one that has directly followed injury to the ligaments of the vertebræ. Some of the text-books on surgery (Gross) describe a "chronic rheumatic arthritis" of the spine. In such a condition the ligaments do not probably always escape, and from the close proximity of certain of the ligaments to the spinal dura it is not unreasonable to suppose that the latter may become secondarily affected. So far I know of no positive proof from post-morten examinations confirming me in my belief that affections of certain spinal ligaments give rise to pachymeningitis, but after a careful study of the positions of these ligaments and their relations to the intervertebral foramina through which the spinal nerves with their dural coverings pass, it seems strange to me that writers, especially those on nervous diseases, have not referred to the probable connection between the affections of certain spinal ligaments and chronic inflammation of the spinal dura in the neighborhood of the intervertebral foramina unassociated with caries of the spine.

I recognize the fact that caries of the spine, even in the adult, is not a very infrequent disease, but it is an impression with me, amounting almost to a conviction, that those who regard external spinal pachymeningitis as tantamount to caries may be in error. Cases of incipient spinal caries, on account of the prominence of certain nervous symptoms, are more frequently referred to the specialist in nervous diseases than to the surgeon, yet, with the single exception of Gowers, the former, in their works devoted to the consideration of nervous affections, have left to the latter the task of giving a full and clear description of the symptoms diagnostic of spinal caries. What I shall have to say to-day will relate mainly to the

diagnostic symptoms of chronic spinal meningitis, spinal caries, incipient myelitis (congestion of the spinal cord?) and that large group of symptoms supposed to be due to spinal irritation. I do not hope to make the diagnosis of these affections easy, for it requires considerable diagnostic skill and a thorough knowledge of the structures, functions and diseases of the cord, its membranes and adjacent parts to enable the most skillful to make a satisfactory diagnosis. Despite the greatest precaution and care a case is occasionally met with that baffles the diagnostic acumen of the best.

Before studying the symptoms of the diseases to which I wish to direct attention, I desire to pass in brief review the structures that immediately surround the cord, affections of which may give rise to or modify the diseases of the latter.

The vertebral canal is formed by the bodies of the vertebræ, their pedicles and laminæ. The ligaments of the vertebræ which are found principally within the spinal canal, and may, when diseased, affect, by pressure or otherwise, the spinal cord, its membranes, the vascular supply or the spinal nerves as they pass into the intervertebral foramina, are the posterior common ligament and ligamenta subflava. The posterior common ligament is separated from the dura mater of the spinal cord by "loose filamentous tissue, very liable to serous infiltration." The spinal dura mater is separated from the bony walls of the canal by a quantity of soft fat, or loose areolar adipose tissue, and a plexus of veins. It is attached to the circumference of the foramen magnum, and to the posterior common ligament of the vertebræ by means of fibrous tissue. It is pierced separately on each side by the anterior and posterior roots of the spinal nerves, and forms fibrous sheaths for them, short in the upper portion of the cord, but longer in the lower.

The visceral layer of the arachnoid membrane surrounds the roots of the spinal nerves and forms sheaths for them up to the point of their exit through the dura mater. The pia mater is intimately adherent to the spinal cord, forming its neurilemma, investing each of the filaments of the spinal nerves, and giving a sheath to each of the nerves themselves. It aids in maintaining the cord in position during the movements of the body, and has been called from this circumstance the central ligament of the spinal cord.

The spinal cord at birth reaches as low as the third lumbar vertebræ; in the adult, not lower than the lower portion of the body of the first lumbar or upper portion of the body of the second (Gray, Allen). Fehct thinks the cord reaches a little lower in the female than in the male (Allen). Its position in the canal is closer to the bodies of the vertebræ than to their arches, although it is not far removed from the pedicles of the bones. The cord is raised in extreme flexion of the spine. The anterior portion of the cord is supplied by a larger artery than the posterior, and the upper portion of the cord has a less precarious blood supply than the lower. The arterial pressure is much less in the cord than it is in the brain.

Experimental results following ligation of the abdominal aorta have shown that the posterior columns of the spinal cord, unlike the anterior columns, are not entirely and directly dependent upon the lumbar of the branches of the abdominal aorta for their blood supply. Seguin, in the Annual of the Universal Medical Sciences, says:

In 1884 Ehrlich and Brieger made observations upon the histological alterations of the spinal cord after this operation (ligation of the abdominal aorta); and recently Singer has repeated the experiments. In animals (rabbits?) killed twenty-four or thirty-six hours after ligature of the abdominal aorta below the renal arteries for one hour, he found granular degeneration of the multipolar cells. On the fourth day there was destruction of the myeline and of the axis cylinder in the anterior horns, the antero-lateral columns and the anterior nerve roots. After five weeks section showed shrinkage of the entire gray substance, absence of multipolar cells; the antero-lateral columns and the anterior nerve roots (with exception of a few fibers) were degenerated. The peripheral nerves were extensively degenerated and the muscles sclerosed.

On the other hand, the posterior ganglia, the posterior roots and the posterior columns were normal, although during life anæsthesia had been present. In the anterior commissure were a few normal fibers.

The veins of the cord emerge principally from the posterior median fissure. The large venous plexus in the spinal canal receives the blood from the veins of the structures immediately over the spinal column, from the bodies of the vertebræ and from the spinal cord and its membranes. It is important to bear in mind that the veins of the cord cannot be distended by injecting the venous plexus within the spinal canal. A spinal nerve is formed by the union of an anterior and a posterior root which unite immediately after the emergence of the latter root from the ganglion by which it is surrounded. The ganglia are situated externally to the dura mater. In the extreme upper cervical region (1st and 2nd) the ganglia are placed on the arches of the vertebræ over which they pass; the ganglia of the sacral and coccygeal nerves are in the spinal canal, while those of the remaining spinal nerves are found in the intervertebral foramina. intervertebral portions of the spinal nerves are inclosed in tubular sheaths of dura mater and are surrounded by the veins of the vertebral plexus and by lymph vessels."

The spinal nerves are much less likely to be subjected to undue pressure after they emerge from the intervertebral foramina than during their passage through them. On each side of the spinal column are situated the ganglia of the sympathetic nervous system, by affections of which the blood supply and the nutrition of the cord may be modified.

It may appear to some that I have gone into unnecessary anatomical detail in reference to the structures surrounding the cord, but to such I can only say that when we come to study the complexus of symptoms included under the head of spinal irritation, a term made to include symptoms apparently due to opposite conditions of the blood supply of the parts, we shall then see the

necessity of a more thorough anatomical knowledge of structures, affections of which may modify the functions of the cord.

SPINAL IRRITATION.

The affection which has received the name of spinal irritation is supposed by Hammond to be due to anæmia of the cord; by the Griffin brothers, who first gave a clear description of the disease and whose opinion Allan McLane Hamilton accepts, to irritation of the sympathetic ganglia, which may be attended by anæmia or congestion, depending on the degree of irritation to the sympathetic ganglia; whilst Dr. V. P. Gibney has advocated the view that it is a meningeal affection, usually resulting from an injury of some kind (Transactions of the American Neurological Association, for 1877). Under the head of Spinal Neuralgia, Gowers, in his work on Nervous Diseases, describes symptoms similar to those found in spinal irritation.

After a careful study of the records of numerous cases of what, for lack of a better name, I shall term spinal irritation, although with our imperfect knowledge of the pathology of the affection, spinal hyperæsthesia or neuralgia, seems to me, equally appropriate, I am convinced that the clean-cut cases of spinal irritation due to anæmia are less numerous than those complicated by symptoms of a mixed condition.

The cases coming under my observation have invariably occurred in persons whose general health has been below normal, although many of the patients were apparently well nourished, and in some the face and eyes presented a congested appearance.*

While women are by far the most numerous sufferers, it is not infrequently found in over-worked or worried men who lead sedentary lives and are irregular in their habits of eating and sleeping. Persons of a nervous, irritable and hysterical temperament are commonly the subjects of spinal

^{*}Since the above was written I have seen E. G. Whittle's book, entitled "'Congestive Neurasthenia, or Insommia and Nerve Depression."

irritation. A marked feature of the symptoms of certain cases of spinal irritation is their variability. At one time one symptom or a group of symptoms are prominent, and at another a different set may absorb the patient's whole attention. This is not the condition in all cases, but it depends upon the emotional state of the patient. While I am far from claiming that all cases of this affection are principally hysteria, vet I am persuaded that hysteria plays an important part in a fair proportion of them. The longer the affection has lasted in an aggravated form, as a rule, the more of the hysterical element will there be mixed up with it. In such cases the patient is not only hysterical and irritable, but othe mind is often affected, sometimes almost to the point of insanity. Insomnia is a frequent and almost constant symptom of spinal irritation, especially when the upper portion of the spine is the seat of tenderness. Headache, sometimes located in the forehead and over the eyes, at other times in the top and back of the head, while in another class the pain is limited to one or both temples, is often the principal symptom for which the patient seeks medical advice. Sometimes the patient is a more or less constant sufferer from a dull, heavy pain in the head, and is periodically attacked with megrim, lasting from a few hours to a day or two. A full feeling in the head with a sense of constriction around the forehead is often complained of. The scalp is frequently tender to the touch and is the seat of more or less pain. Disturbances of vision are not infrequent and a ringing noise in one or both ears is quite common. Vertigo is often troublesome while the patient is in the erect posture. It is usually, but not always, relieved by the recumbent posture. In some cases the vertiginous sensation is increased on the patient's lying down. I have recently had one such under my care. A drawing sensation in the muscles of the back of the neck has been complained of by a number of my patients. An irritable, spasmodic cough with more or less difficulty in breathing is present in a certain proportion of cases. The

difficulty in breathing does not usually amount to more than a sense of oppression or weight upon the chest. Aphonia has been met with quite frequently by some observers, but so far, I have seen only one case in which the loss of voice was associated with an irritable spine. Cardiac distress, palpitation, vascular throbbing, flushes and epigastric pulsation occur in a number of cases (Radcliffe) and seem to result from irritation in special portions of the spine and are often associated with nausea, vomiting and sometimes pain in the gastric region. Eructations, nausea, vomiting and retching are familiar symptoms of spinal irritation, and according to my experience the more the hysterical element predominates the more frequent and troublesome the gastric disorder. Pain in the stomach seems to have been met with only when the dorsal region of the cord was the seat of tenderness. Neuralgic pains, next to spinal tenderness, are the most constant symptoms in spinal irritation. I have never seen a case in which they were absent. They are irregular, shifting from place to place, intermittent or periodical; may occur in any portion of the body, although their seat is determined to a great extent by the portion of the cord affected. Mental or physical fatigue, straining or twisting of the back or anything that exhausts the patient brings them on or increases them. They are often relieved or greatly lessened by the recumbent posture in uncomplicated cases due to spinal anæmia. The bladder is sometimes irritable when the lower portion of the cord is affected, but there is no paralysis of the sphincter of the bladder or anus. Hyperæsthesia is a very common symptom and is sometimes quite extensive and distressing. Hamilton says that anæsthesia may be present, but so far I have not met with a single case of spinal irritation uncomplicated by neuritis or organic spinal disease or a predominating hysterical element in which anæsthesia was present.

I think Dr. Radcliffe is correct in stating that numbness is not due to spinal irritation, but to some complicating circumstance. The disturbances of motility that sometimes

occur are probably of a hysterical nature. They include paresis, paralysis and chronic muscular contractures. Radcliffe says: "Partial paralysis of the limbs occurs in cases of spinal irritation, but it comes late and is due to vascular changes, probably congestion or myelitis or spinal exhaustion."

Chronic muscular contractures are found associated with some cases of spinal irritation, but in these there is probably a hysterical element. Hammond has reported fibrillary twitchings, chronic spasm of muscles and general chorea. The reflexes and the muscular irritability probably remain nearly normal. In some cases in which the hysterical element seems to predominate there is an increase of the knee-jerk. The temperature in the uncomplicated cases remains nearly normal.

The symptoms vary according to the region of the spine affected. When the cervical spines are tender, vertigo, dizzy feelings, insomnia, scalp tenderness and pain, localized and diffused pain in the head, face and neckache, a drawing sensation in muscles of back of neck, noise in ears, disturbance in vision, nausea and vomiting and cardiac and respiratory symptoms, together with all kinds of radiating pains from this portion of the spine may be complained of. Motor disturbances may also be present. Pain in the stomach, according to Hammond and Radcliffe, do not occur with cervical tenderness of the spine unless the dorsal portion is affected. In the twentyfive cases of spinal tenderness limited to the cervical region, given by Hammond, vertigo was present in eleven; headache in fifteen; noises in the ears in eight; disturbances of vision in four; fullness and sense of constriction around forehead in several; mental perversion (in some almost to the point of insanity and in others but slight) in all; deranged sleep in all; neuralgic pains in seventeen; nausea and vomiting (but no pains in the stomach) in fifteen; and perverted motility in eighteen.

The author here referred to observed fibrillary twitchings and clonic spasms of the muscles of the neck in several; general chorea in three; contractures of the flexors of the arms in two; and aphonia in four. Cardiac irritability, flushing and sweating of the face and neck, irritable cough, and sometimes a sense of weight on the chest, are not infrequently met with in spinal irritation affecting the lower cervical and upper dorsal regions.

When the dorsal portion of the spine is the seat of tenderness all kinds of visceral disturbances are common, such as spasmodic cough, difficulty in breathing, cardiac distress, with palpitation, vascular throbbing and flushes. The epigastric pulsation is said to be most frequent in connection with tenderness of the dorsal region. Nausea, vomiting, gastric and sub-mammary pain are among the symptoms found in tenderness of the dorsal region. The sub-mammary pain is often only noticed when pressure is made over the tender spines.

When the lumbar region of the spine is the seat of tenderness, neuralgic pains in the legs, groins, abdomen, uterus, ovaries, bladder and rectum are common symptoms. The bladder sometimes becomes quite irritable. Hammond has met with cases of incontinence of urine. The sphincters of the bladder and anus are probably never involved in uncomplicated cases. Paralysis or spastic contractures of the muscles of the legs has been occasionally observed, but it is probable that the paralysis is purely hysterical and follows spinal irritation rather than occurring as a symptom of it.

There are a few important symptoms connected with spinal irritation that require a little more detailed consideration.

Spinal Tenderness.—While this is not always a prominent symptom in every case of spinal irritation, yet it appears to be almost invariably present when properly sought for. Radcliffe considers it a pathognomonic symptom (Reynold's "System of Medicine") and Hammond says it is a constant symptom and he never regards a case as one of spinal irritation without the spinal tenderness is found when properly sought for. In the cases

coming under my observation, spinal tenderness, though varying considerably in degree, has been invariably present. The Griffin brothers found it present in 143 of 148 cases and Flint in 53 of 58. The tenderness is not always complained of and the patient's attention may be first attracted to it while the spine is being carefully examined to determine the cause of some obscure nervous symptoms. The spinal tenderness is always increased by pressure over the spines, or in the spaces between them. Spinal tenderness as a symptom of spinal irritation does not lose in importance when we remember that spinal pain in uncomplicated cases of spinal meningitis, myelitis and spinal congestion (?) is not increased by steady pressure. The tenderness is rarely limited to one spine, but as a rule, several spines are tender and in some cases the tenderness extends throughout the entire spinal column. The dorsal region is the most frequent seat of tenderness, the cervical the second, and the lumbar the least. 148 cases of spinal irritation observed by the Griffin brothers, 156 given by Hammond and the 34 recorded by Flint, the seats of tenderness may be thus tabulated:

		GF	RIFFIN BROS.	FLINT.	HAMMOND.
Cervical Region -	-	~	23		25
Cervical and Dorsal	-	-	46	3	37
Dorsal (alone) -	-	-	23	21	45
Dorsal and Lumbar	-	-	15	01	19
Lumbar (alone) -	-	-	13		15
Whole Spine -	-	-	23	• •	15
Total	-	-	143	34	156

Radcliffe says: "The pain in the back may be brought on or exaggerated by lifting, twisting or straining the back in any way, or by mental effort." I have found that fatigue from any cause, physical or mental, aggravates the spinal discomfort, but more especially when the patient is in the erect posture. In some cases strong pressure is required to develop the pain and in others the slightest touch is complained of. Radcliffe says that the pain in some cases is as if a nail were driven into the part, in others as if a hard ball were in the part, while in a third the pain is of a neuralgic character.

Hammond thinks the dull, heavy pain, when not constantly present, is brought on by firm pressure, while the sharp pain is elicited by light pressure and is usually attended by hyperæsthesia. The latter symptom, judging from my own experience, is present in a large majority of cases of spinal irritation. Neuralgic pains or various sensory disturbances, depending upon the region of the spine which is the seat of tenderness, may be brought on or increased by pressure over the sensitive spines. In a case, recently coming under my care, pressure over a sensitive cervical spine produced a sharp pain in the forehead, a dizzy feeling, ringing in the ears, pains in the shoulders and arms and a choking sensation in the throat; and in another, pressure over the upper dorsal region increased the sub-mammary pains that were present. Radcliffe believes that in cases of spinal irritation attended with spastic contractures the spinal tenderness is comparatively slight. In a case that was referred to me a short time ago, there were hyperæsthesia and great tenderness of the entire spine associated with torticollis. Before leaving the subject of spinal tenderness, I would like to observe that from the results of repeated examinations of persons in apparent health, I have frequently found the fifth and sixth cervical spines slightly sensitive to firm pressure, while the other spines were very tolerant of strong pressure, but in none of these cases were there any radiating pains so commonly complained of in spinal irritation.

The condition of prolonged muscular contractures that occur in a small proportion of the cases of the affection under consideration resembles the so-called hysterical contractures. The flexor muscles of the lower limbs are most commonly affected, but those of the arms and hands and even the muscles of the jaws (in rare instances) do not

escape. In some instances the flexor muscles of one or both hands are so firmly contracted that the finger nails bury themselves into the flesh, and in other cases, torticollis, extending over weeks or months, exists. The contractures are painless and usually pass off suddenly (Radcliffe).

Paresis or paralysis which is often found in connection with cases of spinal irritation does not seem to me to be properly a symptom of the disease, but rather a sequela of it, and due not to spinal irritation, but to a hysterical condition, or probably vascular changes in the cord, as congestion (?) or myelitis (Radcliffe). The muscular weakness may affect the arms or legs, but more commonly the latter.

Symptoms of spinal irritation may arise in the course of organic lesions of the spine or cord, or a person suffering from an irritable spine may have other and graver spinal troubles added, thus complicating symptoms and necessitating a thorough and careful examination before a definite line of treatment is adopted. The following case will illustrate some of the points here referred to:

H---, a physician about 40 years old, of large physique and florid complexion, but with an irritable or so-called nervous temperament, practiced medicine a number of years in New York city before coming to Colorado, about eight or ten years ago. While in New York he worked very hard and suffered for a number of years from insomnia, irritable spine, tenderness over the intercostal nerves and neuralgic pains in various portions of the body. Finally lung trouble, which decided his coming to Colorado, developed. During the first few years of his stay in Colorado he slept well, his general health improved, he gained fifty or sixty pounds in weight, but his spine remained slightly irritable and he suffered from neuralgic pains radiating from the spine. The last three or four years, as his work and mental strain increased, insomnia again became troublesome and spinal tenderness with neuralgic pains returned to such an extent that he was unfitted for prolonged mental or physical exertion. The latter part of January, 1889, shortly after straining his back in carrying a patient from the operating table to her bed, his back became so painful that he was unable to

leave his room, his temperature rose to 103°, insomnia became intense and pain in the head was complained of. I saw him four days later in consultation with Dr. Elsner. His temperature in the evening was 102.5°, pulse 100 and irritable, respirations twenty. He complained of pain in forehead, eyes, intercostal regions and throughout the entire length of the spine. He was more comfortable while sitting than lying. Lying on his back was positively painful. The spinal pain was lessened by lying in the prone position. The special senses were normal, there was no anæsthesia, but there appeared to be a condition of general hyperæsthesia all over the cutaneous surface. The scalp was very tender and the seat of considerable pain, and slight numb sensations were complained of in the arms and legs. There was no paralysis or paresis. He had an irritable cough, but no bronchial or vesicular râles were detected.

The spine was tender to slight and firm pressure throughout its entire length. The seats of greatest tenderness were at the junction of the cervical and dorsal regions and in the lumbar region. The spinal pain elicited, or rather increased by firm pressure, was of a dull, heavy, throbbing character, and it remained augmented several minutes after we had completed the examination of the spine. The pain complained of in the back before the examination of the spine by pressure was a dull, heavy, uncomfortable sensation. The intercostal nerves were tender to the touch. There was no muscular twitching or shooting pains in the arms or legs. The appetite was poor and the bowels constipated The patient was restless, easily irritated and decidedly uncomfortable. urine was acid, high-colored, scant, but free from albumen and sugar. The diagnosis was an engorgement of the vessels of the spinal canal with a threatened or incipient meningo-myelitis superadded to a condition of spinal irritation. The spine was leeched and dry-cupped, alternate applications of heat and cold were applied for several hours and these followed by blisters. Broken doses of calomel were given at short intervals and a teaspoonful of the fluid extract of ergot was administered thrice daily. The patient was kept on his side, or in a semi-prone position and the diet was restricted for a few days. The spinal tenderness decreased at once and within a few days the temperature had fallen to 101° with amelioration of all the other symptoms. By the end of the

first week the temperature was nearly normal, but the pulse kept frequent (110) and irritable. It was necessary to repeat the blisters frequently for the relief of the spinal pain. The hyperæsthesia was still well marked, appetite poor and insomnia obstinate. The ergot and calomel were discontinued, a pill composed of extract of nux vomica. phosphide of zinc, and arsenious acid, was ordered and a more generous diet insisted upon. The improvement in all the symptoms, especially the spinal tenderness, was continuous for several days, but at the end of the second week from the time I first saw him, the external saphenous and posterior tibial nerves of the right leg, the musculo-spiral and several superficial nerves of the left arm and all the nerves of the left hand became very painful. Several nerves in other portions of the body, while not the seats of severe pain, were sore and sensitive to the touch and hindered free motion of the limbs. Our patient was unable to walk or stand without great suffering. The pain in the nerves of the right leg and left arm was so great that the limbs had to be bandaged and elevated. Blistering over the course of the nerves gave some relief. The condition amounted to one of multiple neuritis. About this time the heart's action became very rapid (110 to 130) and irritable and we began to fear lest the innervation of the heart should become involved. By the end of the fourth week he was gradually improving from the neuritis; the pain had nearly all disappeared, but the limbs felt numb and were used clumsily. The irritable condition of the spine was slight, sleep was better and the appetite good. During the next two months he gradually but slowly improved and, contrary to advice, resumed his practice. April 25, 1889, he is much better, but not free from spinal tenderness. Free stimulation, tonic treatment and a generous diet seem to benefit him, at the present time, the most.

A careful study of the symptoms of the case that I have reported shows the necessity of caution, lest, in a case presenting an irritable spine and most of the other symptoms of spinal irritation, we should be led into the error of treating it for spinal anæmia, or in accordance with whatever other special theory is held as the cause of spinal irritation. The more I study the disease the more firmly am I convinced that it is a collection of symptoms that may be

caused by various conditions. I might report numerous other cases of this affection associated with grave organic lesions. I have recently seen a case of caries of the spine in a person who presented many symptoms of spinal irritation.

Nature of Spinal Irritation .- Post-mortem examinations have thrown no light upon the pathology of this disease. It is essentially a functional disease, so far as our present knowledge of its pathology goes. That it is a perverted function of the parts, due to irritation from some cause, the symptoms seem to indicate. The affection, to me, is always indicative of a lowered condition of the general health, is found in the majority of instances in women, usually associated with a nervous, irritable temperament, and not infrequently with hysteria. It seems to me that spinal irritation is frequently a local manifestation of the condition known as neurasthenia, and that it may have as the cause of the local symptoms, spinal anæmia, or irritation of the sympathetic ganglia or membranes of the cord. In some instances it appears to be a neuralgic condition depending upon the lowered state of the general health. The disease does not always denote too little blood in the parts affected, but an abnormal condition of the spinal circulation, giving rise to imperfect nutrition and perverted function. It is probable that local anæmias, and states of engorgement of the bloodvessels, especially the veins, may exist at the same time in the cord and surrounding structures. I desire to emphasize what I have already indirectly expressed, that I do not believe spinal irritation is a separate and distinct disease, but a complexus of symptoms resulting from an abnormal condition and perverted function of the spinal cord, its membranes, or the sympathetic ganglia controlling the spinal circulation, produced by injuries to the spine, or a lowered condition of the general health from various causes.

Diagnosis.—If, as there is reason to believe, no case should be regarded as one of spinal irritation, unless

spinal tenderness is present, our chief concern in the diagnosis would be to distinguish spinal irritation from the other diseases of the cord and surrounding structures attended by spinal tenderness, were it not for the fact that spinal irritation and graver affections of the parts may exist together. In examining a case of supposed spinal irritation, we should bear in mind the symptoms of congestion of the cord and its membranes (incipient inflammation), chronic spinal meningitis and caries of the spine. That congestion or hyperæmia may be temporary and unattended by serious results, every observer has had an opportunity to satisfy himself, but that it is the early stage of inflammation is also true. How long an organ can be the seat of congestion without leading to structural changes, largely depends upon the delicacy of the structures of the organ involved, and the degree and character of the congestion. It seems to me incredible that any structure so delicately organized as the spinal cord, can be congested for weeks, months, or even years, without tissue change taking place. In the descriptions of congestion of the spinal cord, given by Hammond, Radcliffe, Hamilton and others, many of the symptoms. and some of the morbid changes, clearly indicate a condition that pathologists term inflammation. It is more than likely that the large venous plexus of the spinal canal is subject to considerable temporary engorgement, and were it not for the wise provision of nature, that the veins of the cord cannot be injected by distention of this plexus, into which the veins of the cord empty, vascular diseases of the cord would be of much more common occurrence. I am not aware that the vessels of the spinal membranes are thus protected from over-distention. - If they are not they must suffer whenever the venous plexus of the canal becomes distended. It is evident that congestion of the cord may and does take place, but what I am contending for is, that if the condition is more than temporary, judging from what we know of congestion in other organs, it becomes inflammation, and should be so regarded and

treated. In accordance with the views here expressed, let us study the differential diagnosis between spinal irritation, incipient myelitis (congestion?) in which the membranes are probably also slightly affected, chronic spinal meningitis and caries of the spine:

SPINAL IRRITATION.	Incipient Myelitis.	CHRONIC SPINAL MENINGITIS.	SPINAL CARIES.
Spinal tenderness—alwaysbroughtout or increased by pressure, and usually extends over a considerable region of the spine.		No spinal tenderness to steady pressure in cases of external pachymeningitis and it is slight and insignificant to steady pressure over the tips of the spines when the inner surface of the dura and the other membranes are involved, in uncomplicated cases.	limited to one ver- tebra; in rare in- stances to two or three adjacent ones, and corre- sponds to region of the pain in the
Pain in the back usually, but not always complain'd of. It may be sharp and lancinating or dull, heavy and boring in character. Pressure always increases it.	tom, and is dull and a ching in character. Occa- sionally a sense of heat in the cord.	a constant symptom, sometimes mild, at others very severe. It is great by exaggerated by every movement of the spinal column Muscles of he back stiff and often contracted.	with the degree of inflammation. It is often dull and heavy, increased by motion, especially when cervi-
Headache, ringing in ears and scalp pain.	No head symptoms unless associated with spinal irritation.		No head symptoms unless cervical vertebræ are af- fected.
Hyperæsthesia (gen- eral).	Hyperæsthesia (lo-cal).	Hyperæsthesia (lo-cal).	Hyperæsthesia (lo- cal).
No anæsthesia.	Anæsthesia may be partial.	Anæsthesia (local)	Local anæsthesia may occur, but rare in the early stages.
No numbness or formication.	Sensation of pins and needles, ting-ling in fingers and toes. Sometimes the numb sensation is so great as to make the limbs feel like a lump of lead. All symptoms below upper level of the cord affection	sia.	

SPINAL IRRITATION.	INCIPIENT MYELITIS.	CHRONIC SPINAL MENINGITIA.	CARIES.
No sense of constriction around the body.	A sense of constriction may be felt around the body or limos, but probably never to a severe degree unless decided changes have taken place in the cord.		Rare unless the cord has been pressed upon, therefore not an early symptom in the majority of cases.
Varying and shift- ing neuralgicpains in shoulders, arms mammary region, intercostal nerves, pelvis and legs, depending upon the seat of the spinal irritation.	marked feature.	Eccentric pains ra- diating to the parts supplied by nerves passing through the in- flamed membranes	Radiating pains from the affected region.
Irritable cough, tight feeling in the chest, cardiac palpitation, flushing of the face, nausea, vomiting and pain in the stomach.	ļ	Heart and lungs never affected in chronic spinal meningitis except when the cervical region is involved and the disturbance then is usually due to secondary involvement of the cord.	cervical verteore are the seat of caries In such cases the cervical sympathetic gang- lia may be affected
May be mental dis- turbance.	None.	None	None
Insomnia, irritabil- ity. restlessness, and hysterical marifestations common.	Insomnia, restless- ness and an un- comfortable feel- ing. Rarely any hysterical mani- festations.	Not among the usua! or prominent symptoms.	Insomnia may result when caries involves the cervical vertebræ.
No irregu'arity of the spines.	No irregularity of the spines.	No irregularity of the spines.	Irregularity of the spines the rule. When the cervical region is affected there may be thickening of the ussues over the spine and turn- ing of the head to one side
May be paralysis of a hysterical nature and usually limit- ed to legs.	Incomplete paraple- gic paralysis. Pa- tient may be unable to walk, but able to move the legs when sit- ting or lying in bed.	May be paresis or paralysis of groups of muscles. It results from severe pressure on the spinal nerve roots or from pressure on the cord.	not an early symp- tom and results from pressure on
There may be spas- tic contractures of the muscles of the limbs, but they are always pain- less.	disease has passed		small groups of muscles, but they

SPINAL IRRITATION.	INCIPIENT MYELITIS.	CHRONIC SPINAL MENINGITIS.	SPINAL CARIES.
Sphincters of bladder and rectum unaffected. Bladder may be irritable.	No paralysis of bladder or sphincter and in uncomplicated cases (Radcliffe) Sphinc ters not affected (Hamilton). Bladder may be paralyzed, often generally a fiected (Hammond). Rectum and abdominal muscles paretic, giving rise to obstinate constipation (Hammond) (Are not the above symptoms of myelitis?)	the event of destructive pressure on the cord or certain spinal nerve root.	ed except in ex- treme cases.
Deep and superficial reflexes norma!.	Reflexes variable May be increased, decreased or nor- mal.	creased. Greatly	flex.
Electro-muscular contractility nor- mal.	Electro-muscular contractility nor- mal.	Electro-muscular contractility but little impaired un- less the function of tecord or nerves are disturbed sufficiently to give rise to nutritive changes.	normal of electro- muscular contrac-

The chief diagnostic symptoms may be briefly stated as follows:

Of Spinal Irritation.—Spinal tenderness, usually extending over a considerable portion of the spine, increased or brought out by pressure, always present. Hyperæsthesia and insomnia the rule. Visceral disturbances and neuralgic pains—in various portions of the body, increased, often, by pressure over the sensitive spines, occurring in a person (usually of the female sex.) of a nervous temperament, after a more or less exhausting physical or mental strain, are very characteristic.

Of Incipient Myelitis.—Dull, heavy pain in back uninfluenced by steady pressure over the spine, but increased

by lying on back, blows to spine, jarring of the body, and lessened by lying on sides or in the prone position, are the principal local symptoms referred to the spine. The sensory symptoms are tingling, sense of pins and needles, numbness, hyperæsthesia, rarely anæsthesia, and the motors—if any are present—incomplete, paralysis of a paraplegic form.

Of Chronic Spinal Meningitis.—These are spinal and radiating pains, symptoms of pressure on spinal nerve roots, signs of pressure on cord (rare), history of cause, especially spinal caries, injuries to spine, etc.

Of Spinal Caries.—These consist of deep and limited spinal tenderness, corresponding to slight irregularity of the bones, early excess of cutaneous reflexes (plantar, etc., but not a constant or very important symptom according to my experience), spinal nerve-root pains, spots of anæsthesia or hyperæsthesia, corresponding to deep pain in the spine.

The point may be raised by some that in the tabular view of the differential diagnosis of spinal irritation from incipient myelitis, chronic spinal meningitis and spinal caries, that under the head of incipient myelitis, which is supposed to be similar to "spinal congestion" of several authors, I have given symptoms more nearly resembling myelitis than spinal congestion. This I grant, but all the symptoms given under the head of incipient myelitis may be found in the writings of Hammond (Diseases of the Nervous System), Hamilton (Nervous Diseases), and Radcliffe (Article on Spinal Congestion, in Reynold's System of Medicine), and are intended by them to be descriptive of "spinal congestion."

It seems to me that if "spinal congestion" were dropped from the list of diseases of the spinal cord and membranes, much confusion would be saved. Some of the most eminent writers on diseases of the nervous system (among whom may be mentioned Gowers and Spitzka) ignore it as a separate and distinct disease, regarding it merely as the first stage of myelitis.

A Contribution to the Study of the Traumatic Neuroses (Railway-Spine).*

By L. Bremer, M. D., St. Louis, Mo.

THE symptom grouping which, since the publication of Erichsen's well-known book, has been known as railway-spine, a name which has passed into the medical literature of all languages, has of late years been studied with ever-increasing interest. Aside from the great scientific interest which attaches to the peculiar and often incongruous manifestations of the disease which even today offer a still unexplored and fruitful field for research, it was the practical importance of these cases, especially the damage-suits in their varied medico-legal aspects, which, of late, have given rise to closer observation and study.

Unfortunately we are to-day, twenty-two years after the appearance of Erichsen's book, almost as far removed from a thorough understanding of the symptoms as we were at that time, when Erichsen published the startling results of his experience and created one of the greatest medical sensations of our century.

The reason of our ignorance of the essence and the true inward nature of railway-spine lies in the almost absolute lack of post-mortem examinations. Yet, it must be admitted that modern investigators, though not able to establish the pathogenesis of the ailment, have succeeded in doing away with a considerable mass of superstitious rubbish that used to cling to the subject, and, by the comparative study of related disorders, have been enabled to throw considerable light on the nature of certain heretofore inexplainable and paradoxical symptoms.

Erichsen assumed that these symptoms arose from a

[•] Read before the Medical Association of the State of Missouri, at Springfield, Mo., 1889.

meningo-myelitis, and held this to be the anatamo-pathological substratum of the clinical signs of the disease. Later, under the influence of Hammond's teaching the anæmia theory gained ground. While the former was definitely abandoned many years ago as untenable, the latter view still counts a number of adherents, although there is not a shadow of positive pathological evidence justifying such assumption. There is no practical neuropathologist who ever could demonstrate the anæmia or congestion of the spinal cord or the brain as being a pathological entity, and the whole theory has to be relegated to the realm of fiction. The modern, exact methods of microscopically examining the central nervous system, especially the improved staining processes, have demonstrated that what used to be described as anæmia or hyperæmia denoted in reality quite different lesions and that the whole literature of several decades past, based on the anæmia or hyperæmia theories, rests on fancy, not on facts, and is, consequently, utterly worthless.

A step forward in the task of clearing the field of clinical and pathological delusions was made by Page ("Injuries of the Spine and Spinal Cord," 1885). Although this author never saw a post-mortem of a genuine case of railway-spine (up to '85 but one instance of a reliable autopsy on record, made by Lockhart Clarke), he has done his share, by adducing the testimony of authorities and by his own reasoning, to discredit the anæmia theory. He sides with those who consider the disease known under the misleading name of railway-spine, as an affection of the brain rather than the spinal cord, and lays greatest stress on the psychical symptoms. The negative results and the scanty number of autopsies lead him to assume, with other observers, the existence of a molecular change of the central nervous system, an utter absence of any lesion demonstrable with our present means of chemico-microscopical investigation.

Quite recently two well-known investigators have made the disease in question a special object of study, Charcot, of Paris, and Oppenheim, of Berlin. But even these authors, with the enormous material at their disposal, never had an opportunity of substantiating the clinical inferences by *post-mortem* examinations. Their ideas respecting the nature of "railway-brain" rest on clinical observation exclusively.

Charcot, during the first year or two devoted to this study, became convinced that the disease was nothing but male hysteria, "rien que l'hystérie," and called it traumatic hysteria, maintaining that the symptomatology was, in all its details, exactly like that observed in women.

In opposition to the French author, Oppenheim tried to show the somatic groundwork for the general nervous and psychical manifestations, emphasizing the optic atrophy and pupillary rigidity met with in a number of the victims of railway collisions, as pointing to coarse cerebral disease.

Thus there were two schools on the European continent fighting against each other with facts and arguments. Of late there has been, on either side, a modification of the views rigidly adhered to before. Charcot, after the proof had been furnished by Oppenheim that the variegated anæsthetic and paralytic symptoms in the patients did, as a rule, not correspond with the hysterical forms of paralysis and anæsthesia, receded from his former position, and now declares the essential and characteristic signs of railway-spine to be "dynamic and psychical paralyses, very similar, to say the least, to the hysterical paralysis" ("Paralysies dynamiques, psychiques, fort analogues, pour le moins, ant paralysies hysteriques").

Oppenheim too has made a step in the direction of a compromise by abandoning his insistence on the organic nature of the disease resulting from concussion or vibratory jar. He declares the railway-spine to be a neurosis of traumatic origin.

Thus there is no vital difference in the views on this subject between these two observers, who, owing to the unexampled material at their command and the prominent position which they hold in neuropatholgy, are most competent to form correct opinions on the nature of the disease in question.

It is a traumatic neurasthenia then, an enfeeblement of all the functions; or, to use a still less prejudicial term, a "traumatic neurosis" (Oppenheim), which results so often in the sufferers from railway collisions and from any injuries, especially of the head, which, at the time of their reception, are accompanied by fright and alarm. Whether this latter element is indispensable to the production of the mottled clinical picture presented by the traumatic neuroses, is somewhat doubtful to my mind. The one requisite, more important than any other, is that in spite of a formidable array of the most diverse symptoms, there is an utter absence of any objective sign pointing to coarse or demonstrable microscopical change in the central nervous system.

I shall not tire you with an enumeration of the many symptoms of the disease. You are all familiar with them. The record of one of the cases that came under my observation may be worthy of a brief statement as a type of the disease.

J. G., a very intelligent farmer, now* 35 years old went through a railroad accident six years ago. Up to that time he claims to have been perfectly healthy. In the smash-up he broke his left fore-arm and leg. His head and spine were free from injury. The only symptom he noticed first was a persistent sleeplessness, which withstood even the largest doses of the various hypnotics, whereas the fractures healed quickly and without any untoward symptoms. Ever since he got up, however, he has been troubled with recurring frontal headache, crawling and creeping in the forehead, with tingling in the extremities, numbness in his left arm, dyspepsia, dimness of vision, mental depression, abnormal excitability, gradually increasing impairment of virility, terminating in absolute impotency, and catarrh of the bladder. The left pupil is dilated, the knee-jerk on either side is somewhat exaggerated. Aside of these two last symp-

^{*} This observation dates back four years.

toms there is no other objective evidence of disease. Whenever he gets greatly excited he vomits, when less so he feels nauseated. His general strength is greatly lessened. The trouble, though progressive during the first three or four years, has of late become stationary.

The recording of a case of a traumatic neurosis due to a railroad accident is not complete, unless a statement be inserted as to whether or no a suit for damages was instituted by the patient and what effect a settlement had on the course of the disease. There was no suit brought in this instance and the typical, or at any rate the majority of the typical symptoms of railway-spine existed six years after the accident, and probably exist at the present day. I make this statement for the reason that there are, even at the present day, some physicians who claim that there is no such a thing as railway-spine, that its symptomatology is based upon fraud and simulation.

I could, as other writers have done, multiply instances of the kind where a simple and apparently slight concussion of the central nervous system, brought about the train of symptoms characteristic of traumatic neurasthenia. Among others I have in mind the case of a middle-aged lady who slipped on the side-walk, fell flat on her back and gradually developed some of the most distressing neurasthenic symptoms, such as uncertainty of gait, vertigo, numbness, pins and needles in the extremities, sleeplessness, excitability and general enfeeblement. There was certainly no simulation in this case, nor in a great many others that I can recall to mind who passed many years in chronic invalidism.

That there are many instances of brazen-fronted shamming in connection with concussion of the central nervous system is forsooth a matter of common observation, and yet, in spite of apparently well-grounded suspicion, the physician ought to be careful in charging a case to malingering without the closest scrutiny. The following may serve as an example:

About four years ago I examined at the St. Louis

City Hospital a negro who, several days previous to his admission, had been injured in the quarry of the workhouse by a heavy stone falling from a considerable height on the left side of his head. The external injury was not a serious one, there was no fracture of the skull. There had been no loss of consciousness, no very great pain in the head, but, in addition to a number of paræsthetic symptoms there was a paralysis of the leg on the same side as the head-injury. This statement of course aroused the suspicion of malingering, especially in the case of an inmate of the work-house. Sure enough, the application of a powerful faradic current put the negro on his feet and he willingly left the hospital for the work-house. being evidently much afraid of the electric current. This result seemed to verify the diagnosis of shamming and once more to demonstrate the unalterable law of contralateral paralysis in unilateral injury of the head. The case had entirely passed out of my mind when, several months ago, I happened to meet in one of the city parks a negro who excited my curiosity on account of his peculiar spastico-paretic gait. During a conversation in which I engaged him, I found that he was the same individual whom, I thought, I had unmasked as a malingerer years ago. He told me that after having left the hospital he had resumed work in the quarry, that the electrical shock had improved his leg, but only for a short time, that later on he got fits and was discharged. Since then he has been unable to do any work and has been living on the charity of his friends. Formerly a very muscular man, he looked now wasted, moved about with difficulty, had trouble in making water and suffered continually from a dull headache. The whole of the left side was weaker than the right. He was a complete wreck, the very reverse of his former self. This case taught me, how imprudent it is, to proceed in the examination and the judging of nervous affections in too dogmatic a manner.

Shortly after this experience I saw a farmer who had

been thrown from his wagon while his horses were running off. He landed with his head on the stump of a tree and received a scalp-wound of considerable extent over and behind his left ear. An examination two months after the accident revealed the fact that from the very sensitive cicatrix attacks of unconsciousness, accompanied by slight tremor of the facial muscles, could be produced; the left arm was paretic and anæsthetic; the patient had crying spells; his pulse varied between 115 and 130; he was at times very irascible, quite contrary to his former character. He was impotent, and had no control over the bladder. I saw the patient only once, and the excision of the cicatrix is said to have brought about a considerable improvement of all the symptoms.

In this case, again, was there paresis on the same side as the injury of the head. Dr. Prewitt, of St. Louis, related to me a similar case of traumatic neurosis in a young man whom he, too, suspected of malingering on account of an alleged equilateral paresis in an injury of the head.

Probably my attention would not have been fixed on this peculiar symptom and possibly I might have received such a statement from a patient with incredulity, and consequently paid no attention to it, had I not read a passage in Oppenheim's book in which he refers to this peculiar feature in the symptomatology of the disease. Erlenmeyer, in a review of Oppenheim's book, goes even the length of saying that equilateral paralyses in unilateral lesions of the head are pathognomonic of traumatic neurosis.

The most plausible explanation of this peculiar phenomenon is afforded by the theory of auto-suggestion, a belief which is entertained by Charcot and Oppenheim. The morbidly altered mind fixed with hypochondriacal anxiety on the most minute symptoms or sensations supervening in the course of the malady, will, through fear and apprehension, magnify any little weakness in the lower extremities, and the average patient not being

acquainted with the law of decussation of the central conducting nerve-tracts will locate and fix the trouble on the side of the head-injury. Continued attention will intensify the ailment. Thus the hysterical (self-suggestion) element becomes apparent; but it would be erroneous to put a motor disturbance of such character down as insignificant, since it is well known that hysterical paralysis may be as grave and lasting as those due to coarse lesions. Nay, it has been asserted by no less authority than Charcot that even hysterical paralysis may lead to atrophy of the muscles involved, with the physical sign of degenerative reaction.

Whether such self-suggested paralysis would be on the opposite side to the head-injury in a person familiar with the physiology of the central nervous system, is an interesting point for observation.

There are cases which, by the gravity of the symptoms and their sudden disappearance are apt to astonish the medical practitioner and, although he may not have heard of Charcot's "male hysteria," will suggest to him hysterical exaggeration. Thus there were in the following case a set of symptoms which by their multiplicity, heterogenity, severity and withal transient character, were quite perplexing to the physicians who examined him.

In 1884, an employe of the Bridge and Tunnel Company of St. Louis fell from a freight car, striking the ground with the head. There was no injury visible. I do not know whether he became unconscious. He was taken to his boarding-house, where he was seized with a number of attacks of opistho-tonic spasms of such intensity that his body rested on the occiput and on his heels. There was concomitant loss of consciousness. On the next morning he walked to the St. Mary's Hospital, where the attacks repeated themselves. Between them, he walked about in an unconcerned manner, felt perfectly comfortable and could not be prevented from snioking cigars, averring that there was nothing the matter with him. During the week following he became para-paretic,

so that he had to use crutches. He had the most diverse kinds of paræsthesiæ and anæsthetic spots in various parts of the body; then he became photophobic and absolutely color blind, the visual field being also narrowed; later on, the muscles of deglutition were paralyzed, so that he had to be nourished by means of the feeding-tube; next, there was absolute anæsthesia of the right leg; he wound up with a paralysis of the detrusor visicæ and loss of sexual potency. From all these symptoms he recovered in the order in which they had come on. In the course of seven or eight weeks he was in a condition to leave the hospital and to take a trip to Chicago, where, on the advice of friends, he had "his skull opened." When the wound had healed, he married and returned to St. Louis a well man, as alleged by his friends. Neither the consulting physicians nor myself saw anything of the man ever afterwards. I am convinced that all the symptoms were genuine. There was not a trace of an attempt at even exaggeration; on the contrary, he made light of his symptoms. Judging from his unconcerned behavior, however, in face of the grave symptoms he presented, I think that he was a person not in his right mind.

The Company gave him a moderate sum of money in order to prevent future litigation.

Although I never have seen this man again since he left the hospital, I feel convinced that there will be a stain left on his nervous system. Nobody can pass through a series of such profound nervous disorders without the nerve-tone being permanently lowered. As insanity leaves a blot on the mind, so a large majority of the cases of traumatic neurosis will be left in a state of impaired capacity for work.

If such patients are in the employ of corporations who are willing to assign them work which requires neither mental nor bodily stress, they may be capable of gaining a livelihood. Thus, for instance, there are a number of firemen in St. Louis who have acquired traumatic

neuroses while in the discharge of their duties; they are unfit for the ordinary work of the fireman, but the department gives them positions as night-watchmen, etc., which they fill to the satisfaction of their superiors; the same is true of injured employes of railways and other corporations. But their former degree of independence of selecting work that suits them is gone, their working capacity impaired.

In consequence of the dark prospects quoad valetudinem completam of such patients as have sustained a graver form of the malady, the juries of this country are only too willing to award ample damages to the victims of accidents. Someone has estimated that in the United States and England alone about \$25,000,000 are annually paid to injured employes, among which the cases of railway-spine represent a considerable figure.

There can, of course, be no doubt that a large portion of this money goes to parties who are in nowise entitled to damages, who owe them, not to the gravity of their complaints, but to the deeply-rooted prejudice of the average juryman against corporations, especially railroads. It seems, indeed, that a new profession, that of "accident-victims," has sprung up, and there appears to be danger that it, like the other professions, will soon be overcrowded. It has been suggested by somebody that the easiest way to make a great pile of money at one stroke is to study the books of Erichsen or Page, then travel on railroads, watch for the time when there is more than ordinary jarring and concussion, while the cars are being coupled, for instance, then fall from the seat, and now go to the doctor and the lawyer with the wellstudied subjective symptoms which nobody can disprove. What such a "sufferer" does not know about railwayspine, any symptom that he may have overlooked, will soon be examined into him by the multiplicity of the doctors whom the professional victim is in the habit of consulting.

But exceptionally, the reverse is the case. Owing to

the ignorance of some lawyers who have not familiarized themselves with the peculiarities of the nervous disorders produced by traumatism coupled with fright, the honest sufferer is sometimes wronged, because his counsel does not understand to lay before the testifying physician or medical expert appropriate questions to elucidate the nature of the nerve-trouble for which the plaintiff asks damages. It is especially the unsophisticated plaintiff who will appear to his disadvantage in the witness-chair if the hysterical and emotional side of the case be not fully explained to the jury. Such a man is apt to appear as an impostor, especially when counsel for defendant knows how to take advantage of the mental weakness of the plaintiff. The line of argument of the opposing counsel generally is as follows: 1st, to prove that plaintiff did not receive the injuries for which he sues at the time and under the condition stated; 2d, if he did, it was his own fault owing to the lack of ordinary care; 3d, that the symptoms of which he complains are the result of a vivid imagination or, to say the least, that they are erroneously exaggerated for the purpose of working upon the feelings of the intelligent jury. Here is a case in point:

A coppersmith, about 45 years of age, was working in a brass foundry when an iron pipe weighing about forty pounds fell from a height of about eight feet and struck his head near the junction of the sagittal and lambdoid sutures. The wound healed without any untoward symptoms and he continued to work. In the course of weeks, however, a painful spot about an inch and a half square, with an extremely sensitive center, formed. This center, which was in the cicatrix, would, at times, pulsate, causing great suffering. By pressing upon it or by a draught of air striking it, radiating pains and epileptiform convulsions, followed by mental confusion, could be produced. At times, he would feel as if somebody was striking him a sudden blow on the head.* This happened especially when he was moving about; the

^{*} I have met this distressing sensation several times in neurasthenic women.

pain of these imaginary blows was bewildering and excruciating, and the patient would for a minute or two stand motionless like a statue, dreading to move, lest the blow might be repeated. There was diminution of vision and hearing, scotomes and twittering noises in the ear, formication and numbness in the extremities, a high pulse and occasional fever, grave mental depression; in short, a characteristic symptom-grouping of the traumatic neurosis.

In spite of all these grave signs, the man looked stout and had a florid complexion. At the time, he sued his employers for damages, about two years after the accident, he had very much improved. The plaintiff was treated by counsel for defendants as an impostor and lazy good-for-nothing, and as he made a bad impression on the jury by his over-emotional, unmanly and hysterical behavior, but principally, by the fact that his looks seemed to belie the gravity of his symptoms, a verdict was rendered in favor of defendants. His lawyer had not the slightest idea of the nature of the disease of his client. The man will never recover, his working power will be damaged for the rest of his life. But in order to not draw too gloomy a picture of the ultimate prospects of the victims of concussion and head-injury, I deem it proper to relate the following case as an offset to the preceding one:

An iron-worker, of about 40 years of age, had received an injury very similar to that just detailed, except that there was no epileptogenic zone and that his trouble consisted principally in a paretic condition of the left leg. The wailing of his wife, the commiseration of the neighbors and friends and probably the examinations of doctors and lawyers had all helped to develop a rather serious case of railway-spine. The man's claim was settled about fourteen months after the accident, but there was no improvement. He continued to remain in bed and to harass his family with his everlasting complaints. This proved too much for his wife. She ran off with another man, taking all the money with her. On the following morning the patient got up, dressed, went out, inquired for and obtained work and succeeded in making a living for himself and three children. Several years ago he moved out West and went to farming.

If the bold and paradoxical maxim that "figures lie" has at all any truth in it, it certainly can be demonstrated by the statistics on the final outcome of the traumatic neuroses. According to Erichsen's experience almost no case of railway-spine recovers. Page's observations lead him to the very opposite conclusion; and such remarks as "Recovered directly after his claim was settled;" "Has been well since;" "Soon after settlement looked a totally different man," etc., recur with perplexing frequency almost amounting to regularity. Among the thirty-three cases registerd by Oppenheim, however, only four or five are recorded as "Improved;" the rest figure as "Stationary," or "Progressively chronic."

The difference as to prognosis existing between Erichsen and Page is easily accounted for. Erichsen wrote his book for the purpose of calling to the attention of the medical profession a train of grave nervous symptoms setting in and developing with progressive severity after comparatively trivial injuries received during railway collisions. The peculiar malady resulting from such accidents was until then unknown. He naturally registered only such cases as presented the characteristic symptoms usually met with in the disease under discussion. As a matter of course his material consisted of accident-victims in whom the trouble had become chronic. At the time of the publication of this book the damage-suit nuisance was unknown; persons that suffered but little or got well from the minor forms of railway-spine were not heard from. But one of the results of the appearance of Erichsen's book was the dissemination of knowledge concerning the symptomatology of railway-spine, not only among the physicians but also among the laity. The nineteen years which intervened between Erichsen's book and that of Page changed the aspect of the subject of railway-spine, by the introduction of the element of exaggeration and simulation for mercenary purposes.

Hence the divergence between Erichsen and Page as to the final outcome of traumatic neuroses. The pessimism

of the former is counterbalanced by the optimism of the latter; Erichsen is the authority for the poor man, Page for the corporations. But the impartial observer will incline more toward the views of the earlier observer. I think it unjust to charge Page with partiality and subserviency to the railroad interest simply from the fact that he is in the employ of a large railway corporation. Probably he has tried to be as unbiased in his reports as it is possible for human nature to be. But nobody can be entirely objective in his judgment of things and men, and his frequent dealings with impostors may have caused too great a distrust in the genuineness of the generality of railway-spines.

Again: the gloomy statistics of the German observer cannot mean that the traumatic neuroses are more formidable in character in Germany than they are in England; that German nerves are more prone to suffer from railroad accidents than English. What the statistical difference really does mean is that the accident-victims in England are more apt to show "litigation symptoms" than in Germany; in other words, that the former country offers better chances for damages than the latter. It has been remarked that in Germany the number of railway-spines before 1870 was exceedingly small: the knowledge on the subject among the physicians very scant. But after the laws had been made, in that year regulating the responsibilty of employers in cases of accidents, the number of sufferers has enormously increased, entirely out of proportion to any increase in the number of accidents. That matters are a great deal worse in this country, where the average juryman considers it his sacred duty to give a black eye to the railroads and other corporations whenever he can, goes without saying.

It must be admitted that the patient may have been entirely honest in his statements, even if he does get suddenly well after the "golden cure" has been applied, as Dr. Outten puts it. It has been often remarked what a deleterious influence litigation has on the patient, and how

suspense and dread of an unfavorable issue of the suit intensifies and even multiplies the symptoms. These clogging influences removed, the chances for improvement are naturally enhanced. It need cause no surprise then, that as soon as a satisfactory settlement is reached or the suit has favorably terminated, the patient should look like a different man, and should make rapid strides towards recovery. Whether, however, this will ever be attained in its entirety, is another question. My experience, though I must confess it is a limited one, leads me to think that almost invariably is there a flaw in the nervous tone and balance left behind.

An interesting question which still awaits solution is, whether in railroad employes there is a special liabilty to traumatic neuroses; whether their occupation predisposes them to greater nerve-disturbance under the same conditions than persons following different pursuits in life. I have treated a number of railroad men for neurasthenia of lesser and graver intensity, who claimed that their nervous symptoms were due to the constant though insignificant jarring which their nerves had to undergo, and that they felt better immediately they were off duty or engaged in any other pursuit. I am inclined to think that among the older railroad men neurasthenia, in some one of its manifestations, is extremely common, and that thus they are predisposed to dynamic injuries of the nervous system in cases of collision.

What is to be done in the genuine traumatic neuroses? Permit me first to say what ought not to be done, and let me illustrate it by relating a case in point:

A coal miner, about 40 years of age, was, about three years ago, struck by a falling rock on the right side of the head. The seat of injury, consisting in a scalp wound of no considerable size, was about one and a half inch to the right of the junction of the coronal on saggital sutures. He was unconscious for a short time, but after he came to, resumed his work. He did not feel any very grave symptoms and worked steadily until the wound had healed up.

Then he became dizzy, had darting pains over the head, in a longitudinal direction, starting from the cicatrix. He felt an extreme heaviness and weakness in his limbs and was unable to walk. To the right side of the occipital protuberance there was an intensely burning spot, about an inch in diameter. The head felt like a lump of lead and had a tendency to drop forwards. The scar was very

painful; no depression of the skull.

An operation was performed, consisting in the excision of the painful cicatrix. At the same time a piece of the underlying bone, about the size of a silver dollar, was chiseled out. There was a slight improvement as long as the wound was open. As soon, however, as it was closed, the old symptoms set in again with increased severity. The pain in the new cicatrix and the burning spot in the occipital region were more distressing than before. The head would fall forwards whenever he attempted to get up. He had to support the chin, in order to be capable of moving, and he felt comfortable only when resting in the sitting posture and leaning the back part of the head on a support. During the whole summer he had, on account of the heat, to sit in his cellar and apply ice to the head, this being the only means which afforded him relief and enabled him to live. Spasms in the right leg and the little finger of the right hand (on the same side as the head-injury) gave him considerable trouble. When the leg was bent by the spasm he was unable to straighten it, and the little finger of the right hand was often in a state of hyperextension. Hearing in the right ear was impaired and there was constantly a bubbling noise in it as of boiling water. The same ear symptoms would appear on the opposite side whenever he underwent any exertions. Under these conditions another surgeon believed himself justified in boring another hole into his skull, about two inches behind the first one, which for some reason or other was kept open for twelve weeks, when a third surgeon sewed it up. This second operation did not make the patient any worse, but left him in about the same condition as before.

When I saw the man he presented all the symptoms mentioned above and the following additional ones: He is of a ruddy complexion, looks well nourished and the picture of health. When he gets up to walk, he does

this very cautiously, holding his head in a way as if any unnecessary movement would hurt him. He walks, supported by a stick, the body bent forward, in a tottery manner, as if drunk. He has become very irascible and, when in a fit of passion feels as if his chest and throat were bursting. Time seems to him immensely long. Thus, when he leaves home for a day it seems to him a week and the occurrences of daily life seem to be separated by unnaturally long intervals. He cannot do a simple sum, confusion setting in during the attempt. His intellect seems clear, but inhibited. His memory is good. He can speak only in a whisper and is at times, when fatigued or after a prolonged effort at speaking, completely aphonic.* He has to make signs to communicate with his family. In cool weather he is generally better able to speak but never with his former, natural voice. He is much less able to stoop than before the operation, the brain falling forward and bulging into the hole in the skull. On coughing and speaking the brain

^{*} This peculiar symptom reminds me of Dr. A. B. Shaw's case reported to this Society at last year's meeting and published in the Transactions of '88, p. 348 ff. The patient, a railroad employe, was strongly suspected of malingering on account of persistent aphonia, which seemed to be entirely inexplicable. A laryngoscopical examination made by Dr. Muchall revealed the absolute intactness of the laryngeal phonetic apparatus, there being the proper approximation of the vocal chords during the attempt of phonation. I shall not try to give an exhaustive explanation of this defect, supposing it was real, which I am inclined not to doubt. Possibly it depended on auto-suggestion (my patient could speak louder than ordinarily when excited), perhaps it was due to a morbidly inhibitory influence of the highest centers. At all events, we have to remember that the act of phonation consists of two distinct motor phases: the adjustment of the phonetic apparatus proper, and the expulsion of air through the upper passages. It is conceivable that the inadequacy of the latter act may give rise to aphonia.

Further, the man contended that, on a certain sore spot of the occiput being pressed he became totally blind. Barring occasional dimness his sight was otherwise good. By applying a number of tests Dr. Alt came to the conclusion that the patient was shamming. It cannot be my intention of underestimating the value of the tests employed, but I may be permitted to remark that blindness as used by many persons is a vague term meaning a variety of altered or lowered states of the sensorium and by no means blindness in the ophthalmological sense of the word. Thus, vertiginous sensations are often described as blindness by uneducated persons.

Taking into consideration the strong hysterical tinge of the clinical picture of traumatic neurosis, there is ground for the belief that the man's assertions were, in the main, correct. This was the view taken by Dr. Shaw. With the latter's myelitis theory I cannot, however, agree. A similar case, as regards the symptom of aphonia, may be found in Page's book, p. 167. No abnormality of the larynx could be established.

mass seems to bob up and down through the opening which is covered only by the skin. In walking also the brain sways to and fro. A cotton pad which I applied, to fill out the defect in the bone in order to steady the brain, made matters worse; he cannot bear the slightest pressure on the skin covering the opening. He talks now of having that mythical silver plate inserted in his skull, and this might indeed be a case in which such an operation (the most formidable one in the catalogue of the laity's surgical superstitions) would prove of some value.

The knee-jerks are increased on the left more than on the right. I know of other cases of traumatic neuroses in which, as a last resort, cranial surgery was had recourse to without the slightest benefit. It is very natural that in these times of brain-localization the surgeon should look to the knife as the only remedy in desperate cases. But after the labors and laws laid down by such men as Horsley, Bramwell, Bergmann and others, no surgeon should entertain even the slightest idea of operative interference in traumatic neuroses. How many trepanations and other useless operations have been perpetrated on unfortunate sufferers from brain and general nervous troubles, for which there did not exist the shadow of scientific reasoning or even excuse. Surgeons that undertake such operations, ought, to say the least, to be competent to distinguish between localizing (focal) and general brain-symptoms. In the latter, any and every operative interference is, of course, out of question.

But even in distinctly localizing brain-lesions producing general symptoms, epilepsy, for instance, the results so far obtained are by no means promising. Such operations have, as a rule, an ephemeral effect; the original trouble returns after months or weeks, unfortunately, after the description of the case with the result, "cure," has been given to the medical press, and in some instances, to the daily papers. We must not forget that operations of all kinds and the forced rest which they entail exert a powerful influence on most of the neuroses, especially epilepsy.

But they do not cure; they only keep the malady in abeyance for a short time. In the well-established neuroses no brain surgery will be of any avail, any more than castration in hystero-epilepsy of women, an operation which, fortunately, is gradually losing caste among the surgeons.

Even the comparatively harmless and generally justifiable excision of an epileptogenic or painful cicatrix is very frequently of no benefit to the patient, as the following case will illustrate:

A student of medicine was thrown out of a buggy, landing with his head on the granite pavement. He remained unconscious for half an hour. A scalp wound in the occipital region was sewed up and healed by first intention. Two weeks after the accident, the cicatrix commenced getting painful. There was sleeplessness at night, restlessness at all times, great vaso-motor disturbances, a fear of moving, narrowing of the visual field and great general weakness. The cicatrix was excised, and for several weeks all the symptoms grew better. But in the course of a month they all reappeared with increased intensity. Another excision was followed by a disappearance of the pain in the scalp, but the general symptoms persisted, and for a time, were progressive in character. The patient, unable to apply himself, had to abandon the study of medicine and lives now as an invalid on a farm.

What, then, is to be done for the unfortunates that suffer from any form of these traumatic neuroses? The great healing agents are time and a hygienic mode of living. These two agents may be assisted by the judicious application of a weak galvanic current and cold water. It is astonishing how prompt the improvement is in some cases, up to a certain point, if galvanism to the head be employed, and how cold water ablutions will tone up the nerves. But, I repeat, the outlook as to complete recovery of the former vigor and tone of the nervous system is, in the pronounced cases, extremely problematical.

SELECTIONS.

NEURO-PHYSIOLOGY.

POOLE'S THEORY "ON THE NECESSITY FOR A MODIFICATION OF CERTAIN PHYSIOLOGICAL DOCTRINES REGARDING THE INTER-RELATIONS OF NERVE AND MUSCLE," DEFENDED

BY ITS AUTHOR.—(Continued.)

How Therapeutics Has Suffered.—Perhaps it will be pardoned if I venture to suggest that therapeutics has suffered greatly from the adoption of the dictum that electricity is a stimulus to nerve function. How much of a huge and hypothetical inhibitory system has found, perhaps, its chief support in this very error. When electricity stopped the heart, some mechanism had to be found for the arrest of its action by a stimulus. On what must the excitation expend itself? Not on the proper motor ganglia of the heart, which a stimulus would drive faster. To meet the exigency of the theory it was necessary to imagine a purely hypothetical system of inhibitory nerves, the excitation of which, by antagonizing the proper motor ganglia of the heart, would bring it to a stand-still. It is worthy of notice that in this experiment "the most marked effects are produced when the electrodes are placed on the boundary line between the sinus venosus and the auricles." (Dr. M. Foster, Phys., p. 232.) Now, this is the precise location of the chief motor ganglion of the heart in the frog—the animal in which this observation has been made. so that the assumed stimulus has to pass over the proper motor ganglion in order to reach the supposed inhibitory ganglia, farther away in the septum dividing the auricles! It needs explanation why, under these circumstances, the "stimulus" should ignore the motor ganglion in order to excite its rivals, which are further out of reach of the current.

The theory of the day, on this subject, or rather the "temporary hypothesis," as Dr. M. Foster calls it, necessitates that the action of drugs be wrought out amid the struggle for supremacy between two rival nerve factions or camps, as it were, with results which are far from encouraging. For instance, a recent physiological work on the "Action of Medicines," informs in the opening paragraph

regarding belladonna, that "It paralyzes the motor nerves in frogs at the same time that it excites the spinal cord: after they recover from the motor nerve paralysis the tetanic symptoms of spinal stimulation appear!"

Would it not be well to try how far the results might be simplified on the view that, under the circumstances the heart's action ceased from paralysis of its motor ganglia; thus dispensing for a time with this part of an inhibitory incubus, which threatens to become unmanageable

through its very complexity?

The Voluntary Muscles.—The foregoing considerations have reference especially to the relations of nerves to involuntary muscles. Why it is that muscles of the voluntary or striated class do not also pass promptly into a state of spasm or contraction when their motor nerve trunks are cut, or when the body is dead, I am unable to explain; unless it be admitted that here the motor nerve trunks are more than mere carriers of nerve force—are in fact, with the nuclei and nerve plates at their endings, miniature magazines of nerve energy, which continue for a time to restrain the muscle after section of the nerve trunk or after somatic death.

Post-Mortem Muscular Contraction.—If such an hypothesis were admitted it would serve to explain certain phenomena for which an explanation is necessary, such as the remarkable contractions of muscles which are known to occur in certain cases after death. There can be no doubt that the activity of both nerve and muscle survive for a time the death of the organism. The life of the nerve which is more intimately dependent upon vital conditions succumbs before that of the less vital and more enduring contractile power of the muscle. (Foster, Phys., p. 121.) And as one fasciculus or one muscle or one group of muscles attains its freedom the contraction which follows gives rise to the movements referred to.

Rigor Mortis.—Is a muscle contracted or shortened when it passes into rigor mortis? All observers agree that such is the case, and Dr. M. Foster tells us that the shortening and contraction "may be considerable." (Phys., p. 94.) Is this contraction and shortening the last act of the muscle in dying, or does it occur after the actual death of the muscle—that is, in a dead muscle? Let us consider the latter view first, since it appears to be the one in favor by our physiological teachers at the present time.

If the muscle be dead, not only is its nerve force

extinct, because nerves die first, and consequently there can be no stimulus from nerve energy to cause the muscle to contract, and further the chemical changes in the muscle which generate its contractile force must also have ceased to operate, so that its contractile power is at an end. In the assumed absence of contractile energy it has become customary to attribute the death stiffening to coagulation of the muscle plasma in the muscle. This would account for the rigidity of the muscle, but would fail to account for the contraction and shortening admittedly present. Muscle plasma, in the living muscle, bears the same relation to the myosin of dead muscle that certain albuminous substances in the circulating blood do to fibrin, after blood is drawn off in a vessel. According to Dr. Lionel Beale, fibrin is "non-living matter, and is the product of the death of albuminoid bioplasm." (Disease Germs, pp. 136, 137). If this be true of fibrin, it may fairly be assumed to be true also of myosin, which closely resembles the former. Coagulated plasma, or myosin, is dead, and if the muscle also be dead, and its inherent contractile power at an end, in what manner does dead myosin acting on a dead muscle produce so perfect a counterfeit of muscular contraction, that one of the keenest observers of the day pronounced it, "The most steady and persistent contraction which muscle can possibly exhibit" (Anstie, Stim. and Narc, p. 70); so perfect a counterfeit, indeed, that our eminent English physiologist, the late Dr. Carpenter, employed the microscopical appearances of muscle during rigor mortis as the chief basis for his description of the changes taking place in ordinary muscular contraction, as he himself has told us. (Hum. Phys., 5th Amer. Ed., pp. 307, 308).

Again, the reaction of a living muscle in repose is neutral, or alkaline, but after exercise, or tetanus, the reaction becomes acid, an effect in some way depending upon the chemical processes in the muscle associated with its contraction. In rigor mortis the reaction becomes "most distinctly acid" also. But if the muscle be already dead and these chemical changes at an end, what is the source of the acidity? To the presence of this acid, the coagulation of the myosin and the rigidity of the muscle are of late attributed. But since the acidity is the result, or effect, of muscular contraction in the living muscle, how can it be the cause or starting point of the contrac-

tion and stiffening in the dead muscle?

Dr. Lauder Brunton finds that muscle plasma, "coagudates too quickly in the muscles of warm-blooded animals to allow of its preparation from them." Now, rigor mortis does not usually set in for several hours after death,-Dr. Brown-Sequard found it to be ten hours in four rabbits,-and its onset may even be artificially delayed. The statement, therefore, is only explicable on the supposition that coagulation of the muscle plasma and rigor mortis do not occur together-that is, as cause and effect. It would seem to be implied that the muscle plasma coagulates too early to be the cause of rigor mortis. Dr. Brunton further shows that the muscle plasma may coagulate without producing rigor mortis. In an experiment, detailed on page 363 of the Hand-book, it is shown that, if half a fresh muscle be immersed for a few minutes in water at a temperature of 104° Fah., the reaction will be acid, as Dr. Brunton says, "from development of rigor mortis." The other half of the muscle is to be placed for a similar time in boiling water; and here the reaction "will be alkaline." Dr. B. adds, "Before rigor mortis had time to set in the albumen of the muscle was coagulated. This coagulation set free a quantity of alkali, hence its reaction," Dr. Brunton's exposition of this experiment, if correct, would be fatal to the myosin hypothesis, since if the coagulation of the muscle plasma be attended by an alkaline reaction while in rigor mortis, the reaction is strongly acid, the former could not be the cause of the latter, and they must be regarded as separate and distinct processes.

The foregoing difficulties certainly seem to create distrust in the myosin hypothesis; and we now turn from it, with its dead muscle and inert myosin, to the other aspect of the case, under which the complete cessation of nerve activity and the final contraction of the muscle marks the onset of rigidity. "The rigidity, the loss of suppleness and the diminished translucency," observable in the muscle in this state, are reasonably accounted for by the condensation of tissue which is here permanent, as the contraction is continuous. That a certain relaxation subsequently occurs, during which meat or game, which is at first tough, becomes more tender and toothy, is attributed by M. Rosenthal to the action of the acid referred to, which relaxes the connective tissue which holds the fibers together, so that the latter separate more readily. (Muscles, etc., p. 87-8). This is but the beginning of the

chemical change which ends muscular contractility in the ruin of putrefaction. The following remarkable series of conditions are common both to muscular contraction and to rigor mortis. In both the reaction becomes acid. In both carbonic acid is set free in the muscle. In both the temperature rises—often markedly so in rigor mortis). In both the muscle is contracted and shortened; in some cases, as in death from cholera, "rigor mortis may be said to be simply a continuation of the cramps and contractions occurring during life." (Wood's Prac., Vol. I., p. 717). In both, glycogen is converted into sugar. Do not all these coincidences in appearances and effects point strongly to a similarity of processes in muscular contraction and cadaveric rigidity? Of course the parallel is not complete in every particular. It is said that the muscular sound emitted during ordinary muscular contraction is absent. This sound is attributed to vibration of the muscle substance. Might it not be due in part to the altered circulation in the ordinary muscle during contraction, for it is well known that the blood channels, under certain circumstances, give out a musical note? In rigor mortis, of course, the circulation of the blood ceases, as does also the removal of waste products. That the muscle substance continues to vibrate in rigor mortis is evident, because chemical changes are still taking place there, as is shown by what is said above, and especially by "a marked accession of heat;" (Foster, p. 542); and "heat is only another form of motion," (Rosenthal, p. 42). So that, after all, it would seem as if the atoms of the muscle continue to vibrate, even though no sound is audible.

That indefatigable observer, Dr. Brown-Sequard, some time ago, related to the Biological Society of Paris, "some experiments he had made, by a special instrument, to determine the movements of single muscles in the body after death. He found that there was a very considerable degree of contraction and relaxation, as much, for example, as two and a half millimeters in a muscle measuring only six millimeters in length. He thought that the results of his experiments disproved the theory of coagulation in the muscular tissue as the cause of cadaveric rigidity. (N. Y. Med. Rec., Jan. 9, 1886).

I am not necessitated to prove that rigor mortis is due to *post-mortem* contraction of the muscles; but in the absence of any other satisfactory explanation of this state, I am entitled to refer to it in support of my thesis; and I would ask those who dissent from this view, and who, in consistence with their theory, must hold that nerve stimulus is necessary to muscular contraction, to account for the presence of nerve force under the conditions referred to.

The Influence of the Nervous System on the Renal Function.—The Lancet gives an abstract of Dr. Francesco Spallitta's experiments, made with the view of ascertaining whether the effects produced on the renal secretion by lesions of the medulla oblongata are due, as held by Ustimowitsch, Heidenhain and B. Sachs, to the alteration of the blood-pressure caused by the lesion, or, as supposed by Eckhard, to some morbid change in the innervation of the kidney. The plan adopted was to cut through the spinal cord at various levels, and to watch the effect upon the secretion of urine.

In order to be certain that the urine found in the bladder at the necropsy was secreted after the spinal cord had been cut, a solution of iodide of potassium was injected under the skin after the operation, and the urine tested for iodine. The results obtained were as follows.

I. Lesions of the cord at the base of the first dorsal vertebra produce no changes in the renal secretion.

2. Sections at the seventh cervical and first dorsal vertebra permit the continuance of the secretion.

3. Sections at the sixth, fifth or fourth cervical vertebra allow the secretion to continue, but cause the urine to contain a certain amount of albumen.

4. Sections at the third or fourth cervical vertebra arrest the secretion altogether.

5. Electrical stimuli applied to the cord in the cer-

vical region arrest the secretion entirely.

The theory which seems to Dr. Spallitta to accord best with these facts is that the effect on the renal secretion of lesions of the cord is mainly due to the destruction of special nervous fibrillæ existing in the cord which govern the function of secretion of urine.

THE OLFACTORY CENTER.—At the recent meeting of the Medical Society of London, Hughlings Jackson gave an account of a case of epilepsy with a marked *olfactory aura*. The patient, a woman, aged 53, began a year previously to have fits, the first symptoms being tremors of

the hands and feet. She then saw a little black woman who was always engaged in cooking. She also complained of a horrible smell, a subjective sensation which she was unable to describe. She stood with her eyes fixed for a short time, and although she did not lose consciousness, she passed urine during the attacks. Paralysis of the right arm and leg supervened, and also double optic neuritis. There, however, was no defect of sight, neither loss of smell, only a disordered subjective sensation. She gradually passed into a condition of dementia. At the postmortem, a sarcomatous tumor was found occupying the whole of the anterior end of the tempero-sphenoidal lobe. enveloping the amygdalate nucleus. It did not affect the gray cortex of the hippocampal convolution. The dentate nucleus and the fibers of the internal capsule were compressed by the growth. The case is of the greatest importance as it affords very strong evidence of the position of the olfactory center. It is the first authentic case of this variety of epilepsy, where proof has been produced of an actual lesion in the temporo-sphenoidal lobe. In the report, no mention is made whether the patient was able to localize the olfactory aura in the nostril of the same side as that on which the lesion was situated. It has been shown that the olfactory center fibers, unlike the other cerebral center fibers, do not cross. The case further illustrates the value of experimental physiology, for Ferrier, some years ago, pointed out that the hippocampal lobule and neighborhood is specially related to the sense of smell.—Ed. Montreal Med. Jour., April.

NEUROTHERAPY.

ELECTRIC CATAPHORESIS AS A THERAPEUTIC MEASURE.—Dr. Frederick Peterson, of New York, writes in the New York Medical Journal, April 27: If two compartments separated by a membrane are filled with a fluid, and in each an electrode is placed, there is a streaming of the fluid through the septum in the direction of the galvanic current—that is, from the positive to the negative pole; so that, in the course of time, there is an increase of fluid in the negative compartment. This osmosis, as is well known, occurs naturally without the use of electricity between two dissimilar liquids, the direction of the

osmotic current being from the lighter to the denser liquid. But if the anode is placed in the denser liquid and the cathode in the lighter, this natural osmotic current is not only overcome but reversed. Du Bois-Reymond termed this the cataphoric action of the constant current. This streaming movement is analogous to that taking place in the semisolid sarcous substance of muscle when subjected to the constant current and observed under the microscope—a visible flowing of the contents of the muscular fiber from the positive to the negative pole, causing a swelling of the fiber at the negative end. This is called Porret's phenomenon in living muscle.

Now, it has been found that the skin of animals is permeable to drugs. The degree of absorption varies in different animals and depends upon the quality of drug employed and the manner of its application to the skin. Solutions containing alcohol, ether or chloroform, by removing the fat, render absorption easy. All substances which are volatile and corrode the epidermis, like carbolic acid, are readily absorbed. Watery solution striking the human skin in a finely disseminated spray may reach the interior of the body, probably by penetrating the interstices

of the epidermis.

The cataphoric action of electricity has often been made use of experimentally to introduce drugs into the system through the skin. The anode moistened with a solution of strychnine has been applied to the skin of a rabbit, the cathode being placed upon any indifferent spot, and in few minutes, the animal has died from strychnine poi-

soning.

Dr. Peterson, from a series of over one hundred experiments, draws the following conclusions: The cataphoric action of the constant current is beyond doubt or question. My own experients have been chiefly with cocaine and aconitine. With the former, or with the two combined, a deep anæsthesia may be produced in conjunction with the anode, sufficient for the relief of pains in superficial nerves, or for small operations—such as the painless removal of cutaneous growths, or the electrolysis of hair roots. The anæsthesia may be made rapid by the use of strong currents—an advantage in neuralgias—or slowly produced with a current imperceptible to the patient. Wherever and whenever the anode is employed for the relief of pain, its efficacy will be greatly increased by moistening it with a ten to twenty-per-cent. solution of

cocaine. Rubbing the skin with a little alcohol or chloroform, to remove the oil globules previous to the application, will hasten the effect. Cocaine cataphoresis is particularly of benefit in neuralgias of the trigeminus and its branches. If volatile solutions are used, evaporation may be prevented by the employment of a tight-fitting, bell-shaped, soft-rubber cap, adjusted over the end of the electrode. This is quite sufficient for all therapeutic purposes. The law should not be lost sight of that the amount of electrical osmosis grows with the resistance of the fluid acted upon. Hence, the enormous resistance of chloroform adds to its cataphoric power. In none of the experiments with cocaine or aconitine did any excoriation or other injury to the skin follow, but occasionally, there was slight scaling of the epidermis. There were, of course, no constitutional effects. I would suggest the use of electric cataphoresis for other purposes than that of producing topical anæsthesia. Wherever, for instance, iodine is used as a local application over swellings or tumors, the galvanic anode will greatly add to the efficacy of the medicament.

PLANTS AND THEIR ALKALOIDS.—In an important paper recently read at the Academy of Medicine by Professor, Dr. Germain See, he very correctly stated that in therapeutics, alkaloids and the plants from which they are derived, should not be confounded. These opportune remarks were made in regard to strophanthus and strophanthine, but he pointed out that they might be equally well applied to a number of alkaloids and plants used daily in our practice. In fact, we well know the essentially different nature of the effects of digitalis and digitaline, of opium and morphine, of cinchona and quinine, and of the many plants from which alkaloids are derived.

Cocoa is indisputably that drug to which, above all

others, these remarks can be applied.

Erythroxylon coca possesses, without doubt, analgesic properties, and is held as a superior local sedative, especially where pain exists in the region of the mouth and the throat (as noted and published by Professor Charles Fauvel, long before the discovery of the local effects of Cocaine) and in calling attention to the virtues of this plant, it may be stated that the beneficial effects of wine of coca have been thoroughly established in tuberculous and other ulcerations, existing on the tongue, the mouth,

the lips and on the vocal cords. In all this class of cases such a preparation is of great value, prolonging, as it does, the anæsthetic and sedative effects of cocaine when applied topically or when such application becomes for one reason or another impracticable, proving itself of great service to the physician by reason of its local action.

Coca differing essentially from cocaine, the action of the plant upon the general economy, and not its local

action, should be borne in mind.

Coca is a most active stimulant tonic, especially when used in vinous combination. No better preparation can be employed than the "Vin Mariani," which contains all the valuable properties of the plant, combined with a generous and absolutely pure wine. This has been found

to give the best results.

There are numerous conditions in which this preparation is indicated; in a general way, it is serviceable in all those various diseases which come under the clinical head of anæmia (weak heart, chlorosis, various forms of cachectic conditions, neurasthenia, general debility, and in convalescence from fevers, and tuberculosis.)—Extract from paper of Dr. S. A. Nitard, *Le Bulletin Medical*, Paris, 8 Mai, 1889.

PHENACETIN.—Dr. J. G. Kiernan, in the *Medical Standard* for April, reports his experience with phenacetin as follows: Phenacetin (para-acet-phenetidin) in ten cases of migraine. Of these, three were epileptiform, arising from coarse brain disease (tumors, cerebral abscesses, etc.) Here the drug, given in five-grain doses four times daily, had excellent effects as regards the pain. The migraine was, however, replaced by fits of temper (the patients were children.)

In the other cases there were temporarily beneficial effects. In two of these cases (the patients had a neurotic ancestry) a scarlatinaform rash made its appearance, twice on the use of five-grain doses. It desquamated rapidly, and was noticed only after the first two doses. In trifacial neuralgia phenacetin was often of value, when supplemented by constitutional treatment, where diathetic conditions were present. Constitutional treatment without

the phenacetin did not give good results.

In a few cases of insomnia, resulting from simple exhaustion, phenacetin in ten-grain doses proved to be a valuable hypnotic. It failed in the excited states of mania

and melancholia. In a few cases of agitated dementia, there was a temporarily beneficial hypnotic effect. The fulgurant pains of locomotor ataxia were temporarily relieved. In two cases of fever, cyanosis and excessive sweating were observed to result from five-grain doses.

In my judgment the scarlatinaform rash, cyanosis and excessive sweating must result in predisposed cases from any hypnotic or antipyretic which exercises its action through the nervous system. To be efficient, drugs must exercise powerful action on certain centers, and in defective nervous systems these drugs must produce effects which take the line of the least resistance.

ELECTRICITY IN CANCER.—J. I. Parsons, M. D. (British Medical Journal), details the history of four patients with cancer, whom he has treated with powerful galvanic currents locally applied. The modus operandi in each case was as follows: The patient was anæsthetized and an interrupted voltaic current passed through the tumor and all the tissues for some inches around it, by means of fine insulated needles, so as not to injure the skin. A battery of seventy cells with an electro-motive force of one hundred and five volts was used; and beginning with ten milliamperes the strength was gradually increased to six hundred, and flashed through the growth in every direction from fifty to one hundred times, according to circumstances, carefully watching pulse and respiration the while.

Three of the cases were carcinoma of the breast. The first was a rapidly-growing scirrhus of seven months' duration; the second was a scirrhus of a year's duration, and the third a recurrent scirrhus of the same duration, having come back one year after excision. In two of these cases there was much pain. The fourth case was a painful and fast-growing epithelioma of the cervix uteri. Three of the cases were operated on for the first time August 23, September 26, and November 12, respectively, 1888, and the fourth, January 13, 1889. Electricity was applied from one to four times in the different cases, and the history of each since has been total absence of pains and an apparent stoppage of the malignant growth. Not the least interesting feature is the fact that the patients were able to be up and about the day after the operation.—Times and Register.

[If the reader will look back a year or two over the files of the Register, or over back volumes of the ALIENIST AND NEUROLOGIST, he will find a record of priority for an

American on this subject, even for the editor of the ALIENIST.]

Simulo Tincture.—In the *Medical Record* (May 11th, 1889) Dr. M. Allen Starr contributes, according to Lehn and Fink ("New Remedies"), the most exhaustive estimate of this agent yet published in this country; reviewing the history of the remedy and the published reports of English and German practitioners' trials, and detailing at length his own observations in seven cases in which he employed the tincture, he sums up his experience as follows:

"The general conclusions to be drawn from these cases seem to be that tr. simulo has no effect upon attacks of hystero-epilepsy or upon the hysterical state, none in modifying the frequency or severity of attacks of petit mal, or of procursive epilepsy. It has some effect in modifying the frequency and severity of attacks of grand mal, but is inferior in this respect to the bromides. In cases where for any reason it is deemed necessary to suspend the bromides, it would be well to substitute simulo for them.

"There would seem to be no ill effects from the use of the drug. He found no evidence of change in the rate or character of the pulse or respiration, no dilatation or contraction of the pupils, no muscular weakness, no mental depression or excitement, and no disturbance of the digestion in the doses in which it was used." The doses employed varied from ½ to 2 drs. for children, and 3 to 6 drs. for adults, thrice daily.

The Treatment of Different Forms of Hemiplegia. —Dr. J. Hughlings Jackson, in *British Medical Journal*, says: The type of syphilitic hemiplegia due to a syphilitic endarteritis is not cured by drugs. After the artery is obliterated and softening occurs drugs will do nothing toward curing the paralysis. But active treatment should nevertheless be carried on with mercurials and iodides in order to prevent similar occlusion of other vessels. There is no doubt that some of these cases of hemiplegia do recover, but not from treatment. All cases of hemiplegia, from whatever cause, that get well, do so through the law of compensation by other nervous elements. This compensation will depend materially upon the smallness and position of the lesion.

As regards treatment in all classes of hemiplegia the paralysis needs none. Massage and gentle faradization will be of some service while we are waiting for compensation, but merely as an artificial exercise. To diminish the quantity of highly nitrogenized food, to look after digestion, to keep the patient's bowels free, is the best style of treatment. If arterial tension be high give small doses of mercury and saline aperients. Never give strychnine in cerebral paralysis.

DIFFERENTIAL DIAGNOSIS IN FORMS OF HEMIPLEGIA.—Dr. J. Hughlings Jackson, in British Medical Journal, writes: If the paralysis begins very locally, say in the hand, and increases in degree and range very slowly, day by day and week by week, there is great probability of tumor of the opposite cerebral hemisphere. In most cases of slow hemiplegia one should treat for syphilis in the early stages. A hemiplegia following immediately upon an epileptic seizure beginning very locally would indicate cortical disease in the Rolandic region. The discharging lesion causing epileptic seizures in such cases is usually probably a local encephalitis about a tumor. The treatment of syphilitic post epileptic hemiplegia is treatment for syphilis, of course, and also empirical treatment with bromides, the hemi or monoplegia itself requiring no treatment.

If hemiplegia comes on deliberately, say in half an hour, without defect of consciousness, the presumption is for local softening from plugging of the middle cerebral artery or one of its branches. If rapid with loss of consciousness, or if coma soon follows a diliberate onset, the presumption is for cerebral hemorrhage. But these rules are only empirical and have their exceptions.

ACETANALIDE IN EPILEPSY.—The experience with antifebrin in the treatment of epilepsy, by Dr. Theodore Diller, Assistant physician in the State Hospital for the Insane, Danville, Pennsylvania, after the method of M. Germain See.—He gave it regularly to nine patients afflicted with epilepsy and insanity, and concluded as follows:

I. That in all the cases in which the drug was given continuously there was noted a reduction in the number of fits, ranging from about twenty-five to seventy-five per cent., as compared with other months during which patients were on bromide and tonic treatments alternately.

2. The remedy was in all cases well borne, producing

no apparent mental or physical depression. This in marked contrast with depressant effects noted after a course of bromide treatment.

3. No skin eruption was produced.

4. In any given case, in which a great number of fits are occurring, and where it is desirable to control them as soon as possible, the bromides would be of far more value than antifebrin.

ANTIPYRIN.—The free use of antipyrin in disease is not unaccompanied with danger. Dr. Barrs (London Lancet, 1885, Feb. 28) reports a case in which thirty-five grains of antipyrin were administered at one time to a puerperal woman, with a temperature of 103.6°, and followed in three hours by half the quantity, after which the temperature sank to 98°, and, in spite of stimulation, death occurred thirty-two hours later. There have been reported numerous cases in which cyanosis, disturbed respiration and circulation, and collapse have been produced by antipyrin given in dozes of from thirty to fortyfive grains; and Guttmann has recorded a case (Therap. Monatshefte, June, 1887) in which the administration of fifteen grains caused facial cyanosis, increased frequency of respiration and pulse, dyspnæa, and sensations of extreme heat over the entire body; also a second case in which along with these symptoms there was a widespread ædema. - Wood's Therapeutics.

URALIUM: A NEW HYPNOTIC.—Gustavo Poppi, a medical student of Bologna, recently described to the Medico-Chirurgical Society of that city, the effects of a new hypnotic produced by the combination of chloral hydrate with urethan. From experiments on animals and on the human subject he concludes that this substance—uralium induces sleep more quickly and more certainly than any other known hypnotic. It causes no bad effects of any kind. It has been given in cases of heart disease and nervous complaints with the best results, even when other hypnotics had failed. The British Medical Journal says that experienced practitioners will recognize in Signor Poppi's enthusiastic account of his discovery the familiar trumpet-blast that heralds the first appearance of so many new remedies, "which have their day and cease to be," or which, at any rate, soon lose their title to therapeutic infallibility. - Chemist and Druggist.

NEUROPATHOLOGY.

THE BACTERIOLOGY OF TETANUS.—Professor Bizzozero has just submitted to the Royal Medical Academy of Turin, the results obtained by Professor Tizzoni, of Bologna, and Signora Giuseppina Cattani, on the bacillus tetani. These investigators took their material from a patient in the surgical wards, the victim of a fracture, the seat of which had been contaminated by soil from the ground on which he had fallen. Traumatic tetanus of the most characteristic kind had ensued. Experiments made with the living blood in great quantity, with the median nerve and medulla of the bone taken a little above the point of fracture immediately after amputation of the limb, and also with the brain and spleen after death, yielded negative results, both with the cultures and the experiments themselves. From the material taken from the osseous surfaces of the fracture and from the soft parts immediately contiguous, there were obtained other microorganisms and the "bacillus spilliformis" of Nicolaier. These latter, inoculated in animals, produced tetanus, followed by death after twenty-four or forty hours. Left to themselves for three months in blood serum slightly solidified at a low temperature, there was again obtained from their inoculation distinct tetanus. Cultures of this liquid yielded a coccus, a short bacillus, and the bacillus of Nicolaier. Such colonies become so intimately fused with others, that not seldom the transplantings from them turn out impure. This result probably accounts for the findings of Drs. Belfanti and Pescarolo. In any case Drs. Tizzoni and Cattani are the first, according to Professor Bizzozero, who have obtained a pure culture of the bacillus tetani, and who have kept it such throughout successive transplantings. The sequel of their researches will be awaited with special interest.—Lancet.

Signs of Tumors in the Corpora Quadrigemina.—
(I) Ataxia or an oscillating gait; the function of firmness, in walking, lies especially in the posterior portion of the corpora quadrigemina. The front part of these bodies may be injured without producing this symptom. To describe this symptom more accurately, it may be said to be the ataxia of intoxication, in which the equilibrium, in walking, is disturbed, while the upper extremities are intact. (2) Paralysis of the oculo-motor nerves; the eye-

balls are more or less immovable, the distribution of the paralysis is always more or less irregular; one branch of the nerve may be more affected than the other. In most cases the trochlearis and the abducens are also affected. The combination of these two symptoms indicates, in all probability, the existence of a tumor in the region of the corpora quadrigemina.—Nothnagel, Weiner Med. Presse, 3, 1889.

PSYCHIATRY.

Cocainism a Special Form of Self-Intoxication.—MM. Magnan and Saury report three cases of peculiar hallucination due to the cocaine habit. One patient was always scraping his tongue, and thought he was extracting from it little black worms; another made his skin raw in the endeavor to draw out cholera microbes; and a third is perpetually looking for cocaine crystals under his skin.

CLINICAL NEUROLOGY.

NERVOUS SYMPTOMS ARISING FROM OVARIAN DISEASE, AND THEIR TREATMENT (New York Academy of Medicine. Section in Neurology. Meeting of April 12, 1889.)

—C. L. Dana read a paper, opening a discussion on this subject, from the stand-point of the neurologist. The symptoms properly falling within this description embraced those which were produced at points remote from the ovaries by reflex influence, and not in the ovary. The term "irritating ovary" expressed to him this relation. The physiological basis of such a condition in the ovary might be purely nervous, that is, without anatomical change, and the general neuroses might be produced by such a condition. But most commonly chronic hyperæmia or oophoritis was present. The parenchymatous and cystic degenerations, or ovarian tumors, did not cause these symptoms, and so might be excluded. The mechanism by which reflex effects were obtained might be of two sorts-trophic and vascular. An irritation traveling through the vasomotor nerves caused congestion of the pelvic organs which might become chronic; but if the trophic connections felt the irritation, various remote

symptoms might be produced, and of these a large number were on record. Among those recorded were vasomotor disturbances, cardiac irritability, hysteria, mania, melancholia, neuralgias in the hands or feet, spinal irritation, sciatica, migraine, dyspepsia, insomnia, and vesical and rectal pains. He questioned how large a part of these were direct effects of and really due to conditions in the ovary, and especially as the removal of the ovaries did not, to any great extent, relieve the severer constitutional nervous diseases, such as chorea; and, on the other hand, melancholia, epilepsy, bad neuralgias, etc., often occurred in persons having perfectly healthy ovaries, and severely diseased ovaries often were unaccompanied by any such disorders. Ovarian epilepsy was not mentioned by Gowers, and, although Battey had recorded ten cases, eight of which he had cured, one of these patients had had hysteria and catalepsy, another had afterward died of a brain disorder and another in convulsions, and a fourth had probably had convulsive hysteria rather than epilepsy. We knew that patients having the hysterical affections simulating epilepsy were often cured by small things which made an impression on the mind, such as one dose of a nauseous drug, or the snipping of the conjunctiva. As for ovarian mania or insanity and amenorrheal insanity, similar observations could usually be made as to the real nature of the malady present in the recorded cases sufficient to show that it lay outside the ovary to a very large extent. In women the thoughts tended to dwell on the organs of the pelvis, and it might easily happen that if the ovaries of a hysterical patient were removed she might fancy herself cured. He believed, then, that the ovarian function occupied a subordinate place among the things which determined the chronic neuroses. Sickness could be produced by ovarian irritation doubtless, but not in the specific ways which had been supposed by some to be usual, leading directly to epilepsy, chorea, insanity, etc. The brain, the stomach, and the pelvic organs constituted in all organisms what might be called the tripod of life; but as in man the brain tended to predominate over the two others in comparative development, so the functions of the stomach and pelvic organs tended to become automatic and of subordinate influence on the whole organism.

Dr. W. G. Wylie thought the influence of the ovary in producing nervous symptoms had been overrated;

much depended really on the inherited nervous organization. Thus, a delicately organized woman might be made an invalid by the existence of ovarian hyperæmia or disease which in a strong and robust woman would have no secondary effects discoverable. The sexually undeveloped women from whom so large a proportion of gynecological practice was derived were very apt to have also poorly developed nervous systems, at the same time that they were more likely to have ovarian disease. He would remark at this point that the rectum and colon had an intimate connection with the nervous system. Anal fissures, ulcerative patches in the lower bowel, collections of scybala, etc., were frequently the cause of nervous symptoms, for the relief of which the generative organs had been needlessly operated on. A common condition present, where he had found nervous disturbances really resulting from ovarian disorder, was the thickening and hardening of the ovarian tissue by increased fibroid elements. This caused intense pain locally, and general excitability and irritability before menstruation.

Before he considered doing oophorectomy he made it a rule to get the opinion of an alienist, and also to keep the patient for weeks under his own observation; to examine under ether and see if the ovary was enlarged or confined by adhesions, to try treatment locally and attention to the general health, and to determine that the patient's subjective symptoms were such as to warrant the operation. No well-established ovarian disease could be cured during menstrual life; attempts at ovulation must go on, and this of itself would interfere with any attempted reparative process. From this point of view the necessity of ovariotomy in certain cases was evident; but he believed that, if imperfect sexual development had been more generally recognized as a very common thing and more conscientious attempts made to improve the circulation, digestion, and muscular systems of these patients, better results would have been obtained than had followed castration in hundreds of instances. He had found also that the uterus had much to do with the reflex disturbances under consideration as well as the ovaries, although he had, after years of menstrual hysteria that had resisted all uterine and other treatment, cured it by removing the ovaries.

In brain diseases he had not seen good results from oophorectomy. He had done the operation five times for

epilepsy. In three of these patients it had returned, and in the case of the two who had been cured he had not been convinced that epilepsy had been present at all.

Dr. B. Sachs instanced two cases in which epilepsy had returned after oophorectomy, and believed that, where cures were effected by it, hystero-epilepsy had been present and not epilepsy. The question then arose as to what effect the removal of the ovaries might be expected to have on hysteria of a bad sort, its progress, and its continuance. If in hysteria the ovary was found to be much enlarged or inflamed, its removal was justified but in the majority of cases it was healthy, and the removal of such an ovary was to be decided on as of value or not. The speaker believed that a hyperæsthetic ovary represented only a portion of a general hyperæsthetic organization, and that we had no better reason for removing such an ovary than for excising an oversensitive stomach. The varieties in neuralgic disturbances were not easily numbered. If we removed a painful ovary, we might only be excising one of several foci and compelling the disorder to crop out in other directions. We needed statistics in regard to hysteria being cured in this way. He had seen instances where much amelioration of symptoms was obtained, but in time these symptoms had always returned, sometimes in six months or after a year.

Dr. Mary Putnam Jacobi agreed that larger statistics, based on more precise diagnosis, both of the neural and of the pelvic disorder, were needed before we could judge of the actual influence of oophorectomy over hysteria. In every case it was necessary to distinguish between pain really seated in the ovary and an hallucination of pain generated in an hysteric brain by the same mechanism as other sensory hallucinations were generated

in insane brains.

In reading the voluminous report by Richet of Charcot's clinic, containing over a hundred cases of ovarian hysteria, she had not gathered the impression that Charcot attributed the hystero-epilepsy to disease of the ovary, either organic or functional, but that he regarded the sensitiveness of the ovarian region as one of the essential elements of the general symptom-complex. He indeed called "ovarian paræthesia" one of the hysterical stigmata, and thus classed it with hysterical amblyopia or other symptoms. The influence over the paroxysms exercised by compression of the ovarian (or "hysterogenic")-

zone was comparable with the influence of the epileptogenic zone discovered in the neck of rabbits by Brown-Séquard. In the cases detailed by Richet no attempt had been made to ascertain the condition of the pelvic organs. The histories given included so many records of abortions and confinements (largely illegitimate or associated with desertion by the father), which had been the starting-point of the illness, that the probabilities were greatly in favor of there having been utero-ovarian disease, as well as moral suffering, in the causation of the hysteria. But the fact had not been made out, and therefore these cases, so valuable symptomatically, could not be of use in deciding the question at issue.

The speaker further remarked that the grave forms of constitutional hysteria were quite noticeably free from uteroovarian disease. She had had occasion to observe several such cases (not indeed of hysterical mania, but of serious psychic deterioration) where the symptoms had developed spontaneously early in life, and where, in spite of the asseverations of the patient, there had been no objective sign of pelvic disease in either uterus, ovaries, or rectum.

The negation of any necessary connection between hysteria and uterine disease had, in fact, been the chief aim of the classical treatise of Briquet. His conclusions might now require to be modified to accord with our greater precision in pelvic diagnosis, but many of them must remain good. Undoubtedly constitutional hysteria was a disease of the brain, and when oophorectomy affected such cases it did so by the medium of the impression made on the brain. But these cases were to be distinguished from those where hysteroid symptoms coincided with the appearance of the symptoms and objective signs of utero-ovarian disease.

It was noticeable that hysteroid disturbances were predominantly vasomotor in character, being best explained by assuming the existence of a vasounotor disorder in the nerve centers, or an analogous disorder of unstriped muscular fiber elsewhere. Correlated with this clinical fact was the anatomical one that all the nerve filaments of the ovary so far discovered had been found to terminate in blood-vessels. It was probable, therefore, a priori, that, when ovarian hyperæmia or oöphoritis existed, its distant effects should be produced in the sphere of the vasomotor system, and so only indirectly in the cerebro-

spinal nerve centers.

The identity was almost complete between the nervous symptoms of oophoritis and those of fundal endometritis, as the common distribution of the utero-ovarian nerve to both ovary and fundus would lead us to anticipate.

The speaker thought an exact analysis of clinical histories would show that opphoritis was always preceded by a fundal endometritis, which also often continued on with it. Primary oophoritis was not observed any more than primary adenitis. Permanent nausea and also tympanites were characteristic symptoms of a lesion of

the utero-ovarian nerve.

The interesting researches of Anjel (published in the Archiv für Psychiatrie) seemed to imply that a prolonged vasomotor cramp of cerebral blood-vessels was habitually associated with neurasthenia. His experiments had been made with the plethysmograph applied to the arm. The afflux of blood from the arm to the brain during mental activity which this instrument registered in the case of healthy persons failed to occur in neurasthenics. Such a vasomotor cramp might easily be initiated by the vasomotor irritations of a diseased ovary. It might imitate and abnormally prolong the high vascular tension properly peculiar to the premenstrual period. English writers had emphasized the occurrence of a special form of dyspepsia in ovarian disease which they called "ovarian dyspepsia." This might very possibly be due to vasomotor spasm of blood-vessels in the gastric mucosa, resulting in impaired secretion of gastric juice. It had been stated that in neurotic dyspepsias tests of the gastric contents showed an absence of hydrochloric acid.

The speaker had recently observed a case in which hyperæmia of the fundal endometrium, and apparently of the ovary also, had been caused by the growth of some small subperitoneal fibroids of the uterus, where one distressing symptom had been the frequent occurrence of violent paroxyms of gastric disturbance, consisting apparently of spasmodic contraction of the stomach, associated with intense nausea, prostration, and noisy belching of odorless gas. The stomach-pump would prove the stomach empty, and washing out had afforded it no relief. However, the paroxysm had been several times arrested by a strong, painful galvanic current passed from the lumbar spine through the ovarian region; and six electrical cauterizations of the fundal endometrium during a period of two months, together with

constitutional treatment of the anæmia, had sufficed to

effect a complete cure.

Dr. W. R. Birdsall agreed with Dr. Wylie as to the rules for operative treatment. A variety of reflex disorders had been treated surgically, medicinally, and otherwise, and very various results had been obtained. He thought there had been a reason in each case for the result. One thing to be remembered was that the majority of those subject to neurasthenic disorders were people who were readily affected by any agent whatever which was brought to bear on them. But relief of one manifestation of irritation in such an unstable organization was very apt to be followed by another of some other sort. We saw, such recurrences relief temporarily gained by the operative or palliative treatment of nasal or ocular affections, as well as after the lifting of a prolapsed and sensitive ovary or appropriate treatment of the uterus, bladder, or rectum, where reflex disorders had arisen. The monster was hydra-headed and cropped out in other directions. This should not deter us from operating where well-marked local conditions were evidently giving rise to irritation. The relief so obtained might not be entirely due to suggestion. The irritation in question might be the straw breaking the camel's back. On the other hand, the local lesion might be the effect and not the primary cause. Still, everybody must have seen examples where the real relief of nervous disturbances was obtained by treatment of various forms of uterine associated with ovarian disease. This was illustrated in a case he had recently attended. A married woman had suffered from a peculiar nausea and faintness, as if about to lose consciousness, associated with pain, referred to the abdomen, which radiated down the thigh or up into the stomach. Examination had shown the existence of anterior flexion and prolapsed ovaries, pressure upon which had given the peculiar sensations referred to. The relief of this local condition by a suitable pessary had been followed by immediate and lasting recovery. But many cases belonging to this class could not be relieved, as where the ovaries were displaced and bound down by adhesions; here gynecologists were apt to admit that they could do nothing, since it was not safe to attempt the removal of such ovaries. There was another class of cases in which, although on removal of the ovaries some disease was found to be present in

them, the pain continued as severe after the operation as before. He had two or three such cases under his own observation.

Well-established neuralgias were not relieved by the amputation of parts in which they were seated; in other words, the neuritis once set up went on and manifested itself in parts not previously affected. He had heard it said that the pain sometimes subsided, but he had a case under observation now in which eight years after opphorectomy the pain for the relief of which that operation had been done continued as severe as ever. He believed then that there were two extremes in the nature of the conditions we had to deal with, and correspondingly in the results of ophorectomy.

Dr. H. T. Hanks spoke of the value of electricity in relieving the pain in ovaries bound down by adhesions. He gave an instance where an enlarged ovary had given rise to severe nervous disorders until local treatment by tampons and a pessary was used, and another in which nervous symptoms very much worse than those ordinarily suffered by a pregnant woman were found to have been entirely due to a large cystic degeneration of the ovary with adhesions binding it to the abdominal wall. He thought men of experience had come to know when an operation was advisable and when not. The pioneer work in this field had been done by Tait and others. He was satisfied that prolapsed hypertrophied ovaries should be removed. If much bound down by adhesions, electricity was the best means of relieving the irritation in them for ordinary practitioners to employ; only the most skillful operators should attempt their removal.

Dr. H. J. Boldt agreed with Dr. Wylie as to the tendency of established neuroses to return in time after oöphorectomy, and gave the history of cases illustrative of this. In one the patient had suffered from marked attacks of hystero-epilepsy that increased in severity as age advanced in spite of all general treatment. Pressure on the ovaries had caused severe cataleptic seizures. Oöphorectomy had been done, and the patient's condition had greatly improved; still attacks like those previous to the operation had gradually returned, and the patient suffered now as badly as ever. He had come to the conclusion that where the ovaries were apparently normal, no matter what the nervous condition might be, the patient would not be cured by removing them. Where

the ovaries were imbedded and held down in exudations, treatment of every local sort, including tamponage, massage, and electricity, was first to be tried, and then, in case of failure, the question of removal might be raised. It should be remembered that the nervous disorder might afterward return in a distinctly worse form. Insanity had in many cases been traced to removal of the ovaries. With regard to reflex vasomotor disturbances arising from a prolapsed and sensitive ovary, he would say that in the only case he had met with (in which swelling and discoloration of the upper extremities had been present), tampons and electricity had produced a permanent cure.

Dr. A. H. Goelet thought the discussion had neither proved or disproved the existence of a true causative relation between conditions in the uterus and ovaries, and disorders in the nervous system. Prolapsed inflamed ovaries often caused only intense pain and backache and no neuroses. It had been proved that the treatment of uterine conditions might cure nervous diseases. He had himself cured epilepsy by dilating the cervix, and a case of spinal irritation that eminent neurologists had pronounced a meningitis by the treatment of an endometritis

complicated by salpingitis.

Dr. M. D. Field spoke of the large number of female patients in lunatic asylums who had lost their ovaries. Five such had come to the asylum on Blackwell's Island within the past year, in some instances being brought there directly from Bellevue Hospital (where they had been operated on). However, they belonged to a class of persons who needed only a straw to carry them past the line of sanity, and the shock of the operation or the ether itself might have furnished this. Altogether thirty or forty cases of insanity following gynecological operations had come under his care at the asylum named.

Dr. L. C. Gray, the Chairman, thought those following the specialties would necessarily always be seeing and recording remarkable instances of relief to the nervous system at large from treating local ailments. However, they were certain to get into vagaries if they were imperfectly acquainted with or did not recoghize the workings of the nervous system, due to its own inherent laws. Thus, when epilepsy was relieved by some operation on the genital organs, it was needful to remember that epilepsy might be relieved by any treatment whatsoever, or no treatment at all. All cases relapsed in alternation

with periods of relative freedom from the disease. Hehad seen a case of well-marked tubercular meningitis so improved for a little time by amputation of the prepuce as to cause him to doubt the correctness of his diagnosis.

until the autopsy was held.

Disorders of the involuntary nervous system, when they took upon themselves a local manifestation, gave very varied results. Disturbances which rose only partly into consciousness ramified widely. Thus, when asleep and suffering from some intestinal disorder, we appeared to be in every sort of pain and distress, yet on waking recognized that the real pain was local and not exceptionally severe. Now, remembering that the involuntary nervous system presided over all the functions of the body but mounted into the consciousness to but a slight extent, it was easier to understand how difficult it might be to correctly localize a pain due to a visceral disorder acting as a starting-point of a reflex, or vice versa, and how the most startling successes and failures might occur alternately in the treatment of such pains. Thus, a lady living in the West had been sent to New York for the treatment of severe neurasthenia of years' duration, supposed to be of malarial origin. On leaving home, every symptom of her trouble had disappeared, so that, nothing being found to treat when she arrived here, she had been advised to return to her home again. However, the old sufferings had at once returned and she had come back to New York. Gynecologists had refused to take her case in hand, finding no clinical indications beyond the abdominal pain complained of. He had then tried a current of fifteen milliampères passed through the painful region from one large electrode placed over the ovary (on the abdomen) to the other on the dorsal spine. Her pain had at once subsided, she had returned home, and since had never had a return of the pain or of any other of the old nervous symptoms.

Dr. Dana thought the general opinions expressed decidedly different from those still current in medical literature, and in advance of them.—New York Medical

Journal.

Hæmatoma Oris, a Sign of Spinal Injury.—Dr. B. Lee, in the *University Medical Magazine* for February, gives an interesting record bearing on this point in the case of a child eight months old who fell four feet, strik-

ing on the head and thigh. Examination later revealed what seemed to be hip-joint trouble on the right side, which was treated by various mechanical devices for three weeks. At that time the mother noticed a slight swelling of the gum above the right central incisor in the upper jaw. This gradually increased, and as it did so, became of a livid purple color. It had no tendency to ulceration, nor did it seem painful, except at times when it would cause the child to refuse her bottle for a few hours. After a time it showed itself on the inner side of the jaw as well, and extended laterally in both directions: and bulging down over the teeth completely hid them. Occasionally there would be a slight hemorrhage from it, which was followed by a reduction in size. By the first of December, both hips had improved most encouragingly and permission was given for the child to sit up. This was followed in a few days by most serious results. The attacks of screaming were renewed, sleep was much disturbed, appetite lost, and a certain amount of febrile action set up. It was evident that the upright posture caused her great pain and it was also observed that the movement of the right arm was painful to her. A day or two later the power of motion in this arm became impaired. It was then remembered that occasionally, all along through her illness, movement of this arm had been painful.

On the eighteenth of December, a careful examination demonstrated that there was disease very high up in the cervical spine, possibly between the atlas and the skull. The shoulder soon became slightly elevated and the left arm also began to lose power. Every attempt to place her in the erect position for the purpose of adjusting mechanical support induced paroxysms, threatening convulsions, in which the face became livid and the respiration difficult. She was kept flat on the back with the head slightly lower than the shoulders, extension being made upon the occiput horizontally, sometimes including the chin. This was maintained continuously, and mani-

festly added much to her comfort.

Émaciation now progressed rapidly, and her face became excessively pallid and lips colorless. The tumor of the gums steadily increased and hemorrhage became more frequent. Toward the middle of January a slight purple discoloration manifested itself below the left eye; later under the right eye. A few days later the eye began to

protrude, and it was evident that there was a hæmatoma of the orbit. Loss of power in the lower extremities was now very apparent. In order to employ more efficient extension a padded steel collar was now applied, acting upon the occiput and chin. This was not well borne, however, and it was soon removed. Symptoms of meningeal inflammation, slight convulsive movements, alternating with stupor, and constant vomiting now supervened. As a last resort another effort was made to apply the spinal splint with an attachment for head extension. In order to do this the child was placed face downward upon the knees and kept in that position for possibly five minutes. At the end of that time it seemed as if all the blood in the brain had rushed into the face. It was streaming from the mouth. The turgescence of the gums was excessive. Both eyes were prominent, the left frightfully so. It seemed as though all inhibitory power over the circulation had ceased, and the blood flowed simply in obedience to gravity. After this time the excessive restlessness abated, and there was little suffering, but the patient steadily sank and death ensued within twenty-four hours.

EDITORIAL.

[All unsigned Editorials are written by the Editor.]

Non-Restraint Recommended by the New York Medico-Legal Society.—At a meeting of the Medico-Legal Society of New York, held on Wednesday, April 10th, 1889, the following preamble and resolutions were, after discussion, unanimously adopted:

Whereas, by the Report of the State Board of Charities made to the Legislature in January, 1889, it appears from the report of the Standing Committee of that Board on the insane, that the condition, care and treatment of the insane in several of the county institutions, are not in consonance with their needs, nor with that furnished by the State institutions, and that mechanical restraints are used upon the patients, and their use left largely to the discretion of the attendants.

And whereas it appears from the report of A. E. McDonald, M. D., General Superintendent of the Insane of New York City, that "The Record of the Ward's Island Asylum in the matter of abstention from the use of seclusion or of mechanical restraint, has continued unbroken and recourse has not been had to either since December 18, 1883."

And whereas the principle of the non-use of mechanical restraints has also been adopted in the State Asylum at Utica, N. Y., in the State Asylum for the Chronic Insane, at Willards, N. Y., and at the State Asylum for the Insane called criminals, at Anburn N. Y., and at various other institutions, both in this State and in many of the institutions of the various Sates of the Union and in the Canadas.

And whereas the influence of the State Board of Charities has been greatly impaired, and its advice has not secured in various quarters the respect or confidence of the managers of the county asylums or institutions, or the Board of Officers having these institutions in charge.

And whereas the condition, care and management of the insane, in these institutions in many of the counties of the State, as is reported by the said committee of the State Board of Charities, and as is generally believed by the public, is not in consonance with the civilization of our time, and is in violation of that duty which the people of the State owe to the unfortunate insane, thus exempted from the privileges, care and skillful treatment afforded by the State, in its State institutions, to the insane.

Now, therefore, Resolved that a committee be appointed to investigate the whole subject;

To come into close and friendly relation, with the officials in county asylums, and with the public authorities who control the same;

To advise, as to the best methods of remedying acknowledged existing evils;

To abolish the use of mechanical restraints;

To devise ways and means whereby these evils may be averted:

And to provide that the harmless insane may receive in such county institutions equal, if not better, care than those in State institutions.

To report to this body what steps, or what legislation is necessary, to meet the exigencies of the case, to improve the condition of the insane in the county asylums, and relieve the overcrowding of the State institutions, and that this committee have power to visit and inspect institutions, to take evidence, examine persons and papers, to appoint and name reliable visitors in any part of the State, to keep a record of their labor, visitation and work, and report the result of their labors with their recommendations to this body. (Signed)

ALBERT BACH,

Secretary.

The principle of the above resolution is good wherever and whenever practicable, but the unexceptional practice of non-restraint of the insane is impossible from the very nature of insanity in its manifestations and from the insane man's frequent environment. The more perfect, however, the construction of the hospital for the insane the more practicable it is to apply the principle in the care of lunatics. But hospitals for the insane are built for restraint and not for non-restraint.

Concerning Insane Asylums.—Under this caption a St. Louis city daily newspaper, the *Globe-Democrat*, speaks so sensibly that we reproduce its editorial, barring one small, blundering paragraph which occupied the space of the asterisks.

The *Republic* too, another morning daily, has taken up the cause of the insane in our County Asylum so vigorously and philanthropically as to merit the thanks of all true friends of the insane.

Here is what the Globe-Democrat says:

Concerning Insane Asylums.—The decision of Judge Prendergast in the matter of the investigation of the Cook County (III.) Insane Asylum is of more than ordinary interest. It discloses certain facts with regard to the care of the patients in that institution which are more or less peculiar to all asylums of similar character. The building is overcrowded, he says; the curable and the incurable cannot be separated; the sanitary conditions are all bad: there is not proper food supplied; and the facilities for treatment are in no sense sufficient. These are only the general causes of complaint; others of a special nature are still worse. The asylum is so conducted that the doctors say suicide would be preferable to staying there. According to the judge's view, many, if not all of these evils are attributable to the fact that the officials and

tatendants are all appointed on political grounds, instead of being selected and retained for their skill and efficiency. Where such a system prevails, it is useless, he points out, to expect good service; and the patients are accordingly at the mercy of a class of persons who have no sympathy with them and recognize no obligation of kindness to them. The result is that there is no chance of improvement in any case, and the poor victims of the worst of all ailments are left to grow worse where they are supposed to be receiving beneficial treatment.

* * * * * * * * * *

Great advances have been made in the treatment of the insane in recent years, and most of the old ideas and appliances of cruelty have given place to better methods. The system is still far from perfect, however, and room remains for a decided improvement as to the claims of humanity and morality. Insanity is increasing at a terrible rate, and additional provisions for the care of such persons are required in every State. The lack of room in the asylum is one of the chief difficulties to be contended with; and that can be removed by making sufficient appropriations for the purpose. But the duty of the State does not stop there. It should provide also for the thorough training of attendants, and for close supervision of all the details of asylum work. The fact is well known that a large proportion of the cases are curable in the begining; and they should have the best of opportunities for recovery. To rescue a man from insanity is even better than to save him from death. An insane asylum ought not to have the meaning or appearance of a prison, but rather of a pleasant home, with surroundings adapted to the idea of mental as well as physical comfort and enjoyment. The experts are all practically agreed upon this point. They assure us that good results are to be expected only by the substitution of patience and persuasion for arbitrary processes, and by the multiplication of the sources of ease and diversion. The insane are not criminals to be coerced and oppressed; they are invalids who deserve the tenderest care and nursing, and whose affliction appeals as no other one does to our profound compassion.

The paper from which we quote is on the right track so far as county insane hospitals are concerned, but all wrong when it includes the many well-managed State, corporate and private institutions of the country.

In regard to the Cook County Asylum it says truly:

This is probably one of the most scandalous examples of mismanagement to be found among the many insane asylums of the country; but there is need of reform in all of them, as we are advised by competent observers.

It would be a good thing if papers like the Globe would imitate the example of the Republic, and if both Republic and Globe would go further—and Post-Dispatch

and Star-Sayings too, and all of our metropolitan dailies—and get at the real truth about the treatment of the patients in public asylums.

There are asylums where the system of surveillance and discipline among employes is such that abuses are few; there are others where abuses are greater than

superintendents know.

Let the Argus-eyed press put a press patient in every asylum in the land and bring out the truth, the whole truth, and nothing but the truth, without sensational coloring; and when the whole truth is known men with the moral courage of Clevenger and Kiernan in our profession will be applauded, and hospital management such as that which now disgraces Chicago, in the conduct of the insane department of Cook County Hospital, will be wiped out. The spoils system and political barter should not be possible when the minds and souls of men are in peril.

The International Congress of Medical Jurisprudence. —While a lawyer is a gentleman whose chief occupation in life is to legally circumvent the law, when it stands in the way of his client, he is nevertheless a very clever fellow when he is on our side, and we like always to have him there. Accordingly we hailed with pleasure the coming of the late International Congress of Medical Jurisprudence and rejoiced at the full measure of success which crowned its work.

The Congress, which met in New York City on the 4th, 5th and 6th of June, was the first of its kind that ever assembled in this country. Its work marks the beginning of an important era in the progress of medical jurisprudence in the United States.

It has made a record in the right direction that will

prove imperishable for the good of mankind.

It is gratifying to find the hands of Law and Medicine thus fraternally enclasped for the utilization of Medical truths that are conducive to man's welfare before the law. Medico-legal bodies are practical medical bodies which make certain great truths of real practical utility, which, without such aid, might lie long dormant. They pick out many of Medicine's greatest truths, gleaned by plodding medical research in the dead-house over the cadaver; in the laboratory among the elements; in the microscopic world under the lens and in the hospital at the bed-side, and apply them in the direction of man's welfare and of

human justice before the law. Medico-legal science makes a fraternal charity of scientific endeavor wherever such a result may be practical, and through medico-legal societies our legal brethren also help to tighten the grip of the law on crime and to strengthen its hold on "even-handed justice."

We are gratified to learn the Congress is to be perpetual. It ought to continue its good so auspiciously begun, until the great truths of Medical Science which appertain to man's welfare are made as readily available through the Statutes and before the Courts as similar facts are utilized by clinicians and therapeutists at the bed-side of the sufferer. It is a healthy and cheering sign of the times to see an International Congress of jurists, physicians, scientists and philanthropists of such standing as that which composed the late Congress assembled to inquire of Medicine what it has to give for the welfare of mankind before the law. Such organizations tend largely to refute the charge made in a preceding generation, that "man's inhumanity to man makes countless millions mourn." Such humanity makes the heart rejoice.

In connection with the above, we are gratified to

append the following:

MEDICO-LEGAL SOCIETY,
OFFICE OF THE PRESIDENT, No. 57 BROADWAY,
NEW YORK, June 20th, 1889.

DEAR SIR:—The recent session of the International Congress of Medical Jurisprudence was successful beyond the most sanguine expectations of its promotors. It perfected a permanent organization and provided for the selection of an additional Vice-President from each State and Territory of the American Union, and from each foreign province, State and Country who had members in the organization that took an interest in the success of the movement.

Future meetings were authorized to be called by the Executive

Officers, a list of whom are herewith sent you.

The expenses of publishing all the Papers read at this Congress, with a record of its Transactions and the proceedings at the Banquet will fill a large volume, the expense of which is estimated will be about \$760. The Executive Officers were authorized to elect additional members into the organization, the only expense of which is the enrolling fee of \$3.00, which entitles the member to the Bulletin free.

Will you unite in this movement with a view of making it International, and will you suggest a suitable name for Vice-President from your State, Territory, Province or Country. If this effort is received with favor by the members of the Medico-Legal Society, Active, Corresponding and Honorary alone, without counting others, it will at once provide for the publication of the Transactions and the Papers read

before the Congress, and lay on firm and sure foundations the International work of promoting the advancement of Medical Jurisprudence, not alone within the United States of America, but throughout the civilized world.

Your co-operation in this effort is earnestly solicited in your locality, and your name will be laid before the Executive Officers for enrollment as a member on receipt of the enrolling fee, which can be sent to any officer of the body.

The officers elected by the Congress, held June 4th to 7th, 1889, in New York, were as follows: President, Clark Bell, Esq., of New York; Vice-Presidents, Chief Justice Sir John C. Allen, of New Brunswick: Chief Justice Edward F. Bermudez, of Louisiana; Dr. Bettincourt Rodrigues, for Portugal; Gov. Biggs, of Delaware; Dr. Daniel Clark, of Toronto, Canada; Ex-Chief Justice Noah Davis, of New York: Dr. Edward J. Doering, of Illinois; Prof. John J. Elwell, of Ohio; Judge W. H. Francis, of Dakota Territory; Dr. W. W. Godding, of Washington. D. C.; Dr. Eugene Grisson, of N. C.; Dr. Carl H. Horsch, of N. H.; Judge Locke E. Houston, of Miss.; Dr. Charles H. Hughes, of Mo.; Dr. W. W. Ireland, of Scotland; Prof. Robt. C. Kedzie, of Mich.; Dr. Norman Kerr, of England; Dr. Jules Morel, of Belgium; Dr. Jennie McCowen, of Iowa; Dr. Connolly Norman, of Ireland; Prof. John J. Reese, of Pa.; Judge H. M. Somerville, of Ala.; David Stewart, Esq., of Maryland; Theo. H. Tyndale, Esq., of Mass. Secretary, Moritz Ellinger, Esq., of New York. Assistant Secretaries, Frank H. Ingram, M. D., of New York; Wm. J. Lewis, M. D., of Conn.; J. F. Walters, of New York.

The President was empowered and directed by the Congress to appoint additional Vice Presidents for the various States, Territories, Provinces and Countries, which will be done during the Summer vacation. Members of the Congress receiving this Circular, who have not sent their enrolling fee, will please do so, and circulate this among those who take an interest in the science.

Your early response is requested to either of the undersigned.

MORITZ ELLINGER, CLARK BELL,
Surrogate's Office, New York City. President, 57 Broadway, N. Y.

General Paralysis Not Necessarily a Hopeless Disease.—Dr. J. D. Mortimer asks this, with another question, in the Lancet for March, under the caption "Is General Paralysis of the Insane Necessarily an Anomalous and Hopeless Disease?" and gives some types, which we reproduce below. We have answered this question in the negative several years ago, and we have since had further confirmation of the fact that general paralysis is not always incurable.

One of our cases died this year, of malarial congestion and cerebral apoplexia, after two years of complete recovery, and another, after over two years of health, has some paralytic symptoms, but mainly bulbar, and entirely different from his original disease. He presents some evidences of approaching cerebro-spinal sclerosis, fulgurant pains, tremulous head movement, deliberate speech and early morning wakefulness. But this is all that remains of the original disease.

1. A big man, aged 32; much alcoholic and sexual excess Boisterous excitement, varied by emotional depression. Says repeatedly that his brother has millions, and he himself can have as much as he likes. Pupils equal; knee-jerk brisk; tongue tremulons; slight slnrring of syllables. He recovered in six months, and has had no relapse (two years).

2. A temperate man, aged 45; hard worker and keen politician. Stupor, with slight indications of general paralysis. Well in six months and returned to work. Readmitted, "a typical general paralytic" three months later. Died, worn out, after a few weeks intense excitement.

3. A man, aged 38; irregular life and recent domestic calamity. Extremely ill; large syphilitic ulcers; sores; tongue raw and tremulous; pupils unequal. Sleepless and restless, shouting that he is worth millions, the greatest man in the world, etc. In two months there was 'general improvement; no delusions, slight emotional depression; still tremor and unequal pupils; retinæ healthy. Discharged in four months, being quite rational and intelligent; knee-jerks a little brisk; no tremor or inequality the last six weeks.

4. A man, aged 31, after some eccentricities, became maniacal, with much emotional exaltation, extravagant boasting, letter-writing to the queen, masturbation, self-decoration with trumpery, etc. As this subsided (after close on two years) he became taciturn and hypochondriacal with loss of expression, thickness of articulation, fibrillar tremor and incapacity for exertion. These threatening symptoms gradually vanished, and since (nearly three years) he has been in constant and responsible employment.

These are not all perfectly typical cases, but they nevertheless point a moral in prognosis.

Doctor Billings to Have Charge of Mortality and Vital Statistics.—The following circular explains itself:

DEPARTMENT OF THE INTERIOR, CENSUS OFFICE, WASHINGTON, D. C., May 1, 1889.

To the Medical Profession:—The various medical associations and the medical profession will be glad to learn that Dr. John S. Billings, Surgeon U. S. Army, has consented to take charge of the Report on the Mortality and Vital Statistics of the United States as returned by the Eleventh Census.

As the United States has no system of registration of vital statistics, such as is relied upon by other civilized nations for the purpose of ascertaining the actual movement of population, our census affords the only opportunity of obtaining near an approximate estimate of the birth and death rates of much the larger part of the country, which is entirely unprovided with any satisfactory system of State and municipal registration.

In view of this, the Census Office, during the month of May this year, will issue to the medical profession throughout the country "Physician's Registers" for the purpose of obtaining more accurate returns of deaths than it is possible for the enumerators to make. It is earnestly hoped that physicians in every part of the country will co-operate with the Census Office in this important work. The record should be kept from June 1, 1889, to May 31, 1890. Nearly 26,000 of these registration books were filled up and returned to the office in 1880, and nearly all of them used for statistical purposes. It is hoped that double this number will be obtained for the Eleventh Census.

Physicians not receiving Registers can obtain them by sending their names and addresses to the Census Office, and, with the Register, an official envelope which requires no stamp will be provided for their return to Washington.

If all medical and surgical practitioners throughout the country will lend their aid, the mortality a d vital statistics of the Eleventh Census will be more comprehensive and complete than they have ever been. Every physician should take a personal pride in having this report as full and accurate as it is possible to make it.

It is hereby promised that all information obtained through this source shall be held strictly confidential.

ROBERT G. PORTER,

Superintendent of Census.

We are gratified at the above announcement. Dr. Billings has the necessary vitality and professional vim to manage the subject both in its vital and mortal aspects, and the public may expect a live record of the mortal as well as the vital work done by the profession since the tenth census.

The Forty-third Annual Meeting of the Association of Medical Superintendents of American Institutions for the Insane, held in Newport, R. I., June 18, 19, 20 and 21, 1889, at the Ocean House, was a very successful meeting. The following is the list of papers read and discussed:

"The Moral and Curative Effects of Associated Dining-rooms and Employment of the Insane;" R. J. Preston, M. D. "Remarks on Institutions for the Insane, with special reference to the most Natural and Satisfactory Methods of Giving Food to the Inmates;" H. A. Buttolph, M. D. "The New Hypnotics;" H. M. Quinby, M. D. "The Modern Hypnotics;" H. M. Wetherell, Jr., M. D. "Inebriates in Insane Hospitals;" Edward P. Edliot, M. D. "A Case of

Inebriety with Insanity;" H. M. Hurd, M. D. "Mania following Ether;" Wm. A. Gorton, M. D. "Mania following Belladonna;" Charles G. Hill, M. D. "Provisions for the Insane of the Middle Classes;" J. P. Bancroft, M. D. "The Limitations of the Family System as a Provision for the Insane;" H. R. Stedman, M. D. "Puerperal Insanity;" I. A. E. Steeves, M. D. "Morals among the Insane;" A. B. Richardson, M. D. "The Accountability of the Criminal Insane;" George B. Twitchell, M. D. "On the Mental Condition Accompanying Old Age;" Richard Gundry, M. D. "Sanity and Insanity, and the Classification of the Insane;" H. A. Buttolph, M. D. "Cerebral Localization;" T. W. Fisher, M. D. "The Mechanism of Insanity;" Edward Cowles, M. D. "A General System of Reporting Autopsies in American Asylums;" H. E Allison, M. D. "The Physical Training of the Insane, with Illustrative Exercises;" Walter Channing, M. D. "Disordered Inhibition; its Place in Insanity and in the Physical Expression of the Insane;" C. P. Bancroft, M. D. "A Case of Incipient General Paresis;" H. A. Hutchinson, M. D. "Curiosities in Ancient Asylum Reports;" Daniel Clark, M. D. "Progress and Reform;" O. Everts, M. D. "A Case not Wholly Hypothetical;" · H. P. Stearns, M. D.

We think it would be wise and tend to cement together the ties of friendship among the members, as in the days lang syne, if the Association would return to the old plan of meeting only where there is an asylum. It is much to be regretted for obvious reasons that the Association did not meet in Chicago this year.

Spraying the Surface to Reduce Fever.— As fever is largely a condition expressed through morbid impression of the nervous system, heat centers and vasomotor mechanism, whether the cause be toxhæmic or directly or peripherally neural, any suggestions that give practical methods for reducing to the minimum the consequences upon the organism, of the irritative strain and shock of fever will be welcomed by all practicing neurologists. The wet pack is often itself a too violent shock, as even the cold bathing and sponging are; and the most soothing form of tepid appliance by means of a soft sponge not infrequently irritates the nerve-stricken and depressed febrile sufferer; and peripheral irritation, even from cooling applications, sometimes produces a counteracting annoyance which depresses and exhausts, as well as the heat and pain.

The *Medical News* for May has had its attention drawn to this subject of the surface treatment of fevers, and we take pleasure in laying before the readers of the ALIENIST

AND NEUROLOGIST what it has to say on the latest and best practical contribution to this important subject. A word that saves the organism from the stress of morbid action is a mine of therapeutic wealth—"A word spoken in season, how good it is:"

There can be no doubt that the safest, if not the most effective, of all antipyretic agents, is sponging the surface of the body with water, either tepid, cool or cold. A still more effective and quite as convenient method of applying water to the skin, is in the form of spray as described in a recent number of the *Prager-medicinische Wochenschrift*. Preyer published an account of this method in 1884, although it had been employed somewhat earlier by Flashar. In 1886 Hiller applied it to the treatment of sunstroke. Placzek modified the procedure by spraying first with cold water (53°-60° F.) and directly after with warm (95° F.) In this way he produced a fall of two degrees in the temperature of a febrile animal. The warm spray produces a rapid dilatation of the skin capillaries, and consequent dissipation of heat.

Such measures as these, which are in close imitation of the natural processes of heat regulation, deserve the most careful study. Their soothing effect upon the nervous system is in marked contrast to the prostration so often induced by the antipyretic drugs that have been

lately introduced in such numbers.

The Toxic Antipyrine.—These pages have before warned the confiding reader against too implicit faith in the harmlessness of antipyrine. We now record from

another source the warning repeated.

Dr. Wm. P. Northrup reports (*Med. News*) the case of a woman, 40 years of age, who took fifteen grains of antipyrine with half a tablespoonful of whiskey, for headache. Immediately afterward she felt queer; had a sense of "smelling pepper;" sneezed a dozen times in rapid succession, which was followed by an urgent desire to defecate. She arose from her bed and fell to the floor unconscious.

Dr. N. found the patient lying with eyes closed, countenance pale leaden, "jaw dropped," pulseless, insensitive conjunctiva, and in a condition of profound syncope. She remained in this condition nearly half an hour, until a hypodermic injection of twenty minims of whiskey, repeated after a short time, revived her. Following this she began to vomit, retching for more than an hour. At the end of a month, her headaches not being relieved, she again took five grains of antipyrine with a tablespoonful of whiskey in a little water. Immediately after she began to "feel queer" again, and when her physician reached her he found her lying on a sofa with her head raised;

her face flushed a deep crimson; her neck, wrists and hands covered with nettle-1ash; tearing the clothing from her throat and chest; sighing, gasping, and alarmed in her expression. These symptoms lasted about one hour before they began to subside, thus verifying the caution that Wood, in his new "Therapeutics," prudently enjoins in the timely statement that "the free use of antipyrine is not unaccompanied with danger." A reference to the recent edition of this reliable American authority will furnish the reader convincing clinical proof of the necessity for care in the prescribing of this new agent, as well as evidence of its remarkable antipyretic power. The reader may find some extracts apropos among the Selections in the present number.

Galvano - Cataphory to be Considered. — Dr. Frederick Peterson, of New York, discussing in the New York Medical Journal of April 27th, electro-cataphoresis as a therapeutic measure, draws some valuable conclusions. We place the article entire in our "Selection" Department, and requesting the reader to turn to it, we suggest that galvano-cataphory or electro-cataphoresis has a much wider application. The many electro-therapeutists who read the ALIENIST AND NEUROLOGIST will be inclined to exercise extra caution with their sponge electrodes, lest morbid conditions on cutaneous surfaces of one patient be intercommunicated.

This subject was smiled down a year or two ago, when attention was first called to it in France before Du Bois-Reymond gave it his endorsement, but it persistently reappears and is likely to stay with us as a therapeutic fact that may have some unexpected toxicological bearings. If iodine, etc., may be passed into and out of the organisms by cataphoresis, why may not the virus of certain disease?

Atmospheric Concussion of Lightning Stroke a Cause of Epilepsia.—One year ago, June 6th, Ira Carter, aged 9 years, in good health, was sitting in the doorway of his parents' house during a storm, when the house was struck in a distant part by lightning. All the residents of the house were more or less shocked by the concussion, but its especial violence seemed to fall upon this little boy, who was leaning against the door-frame at the time.

Shortly after the accident he began to perform brief

automatic movements, such particularly as attempting to spit and starting away from those with whom he happened to be. He would always turn to one side out-of-doors, or go to the fireplace in the house to spit. This soon merged into epilepsia gravior with convulsion, unconsciousness, stertorous sleep and frothing at the mouth. In this condition the boy, now 9 years old, comes under treatment.

Our Allies, the Pharmacists.—When the veteran of many battles against disease looks over the field of past conflicts, with its sad failures and happy triumphs, a sense of gratitude, such as that which animates the scarworn military commander, as he thinks of the timely and efficient aid of his faithful, provident and ever-prudent commissaries and quartermasters. Modern pharmacy sugar-coats the bitterest pill, it encapsules the most nauseous and offensive of drugs. But this is not all, nor half its service.

Our allies, the pharmacists and proprietary medicinemen, have taken thorns from our pathway in the practice of medicine and planted it with flowers and pillowed the sick with downy feathers in lieu of the rough head-rests, so to speak, of the past. This is not all, they have given the profession agreeable leverages that help to lift up the stricken in a way they could not have been helped without their aid.

Look, in confirmation, at the helps to medical practice to be found in our pages-all substantial, reliable aids. A quarter of a century ago scarce one of these valuable health helps were before the profession and far cruder and less efficacious methods and agencies were at our command. Only real aids and reliable goods find place in our pages; and turning again to these, we ask what would we do to-day without the Trommers and their valuable Malt Extracts, the Fairchilds and their incomparable Pepsine, the Schieffelins and their invaluable pills, Crittenden's Hydroline, the Hypophosphites of Fellows, the Wine of Mariani, Wheeler's Tissue Phosphates, the Bromidia of Battle & Co., abused, but always reliable, uniform and safe in its action in the hands of the careful physician; the Peptonoids of Reed & Carnrick. What would we do without these real helps in practice? Truly, a skillful pharmacy is the handmaiden of true medicine, and the right kind of a proprietary medicine-man is the ally, and not the foe of successful practice.

We could not in practice well do without these valuable proprietary aids, and the fact that someone has the lawfully protected right to exclusively make and dispose of them, does not deter us from employing them for the welfare of our patients. Nor could we now easily dispense with the Barrett battery or Ruebsam's muscle beaters, or the many other valuable devices offered by proprietary firms to aid us in the relief or cure of morbid conditions, which twenty five years ago went unrelieved for want of these timely helps to our therapeutics.

Nor could we get well along without the Malted Milk and Liquid Beef in palatable and assimilable forms, such as the advertisements in our pages present them.

The "St. Louis Polyclinic" is a new monthly, published by the Faculty of the St. Louis Post-Graduate School of Medicine. Every contributor is a professor of something. It reads well.

The "Kansas Medical Journal" is a new, enterprising and very readable medical monthly, published at Topeka.

Dr. Albert Erlenmeyer's great work "Die Morphium Sucht und Ihre Behandlung" has been abridged and translated by E. P. Hurd, M. D., of Newburyport, Massachusetts. Published by Geo. S. Davis, of Detroit, Michigan. Its title as translated is, "The Treatment of the Morphia Disease."

The Utilizing of Condemned Murderers.—The practical mind of Dr. Frank L. James, of our sprightly, monthly contemporary, would utilize the bodies of such criminals, ante mortem, for experimental pathology. This is a good suggestion, and in lieu of the judicial condemnation formulary: "Hanged by the neck until you are dead—dead—dead, and may God have mercy on your soul," we hope to see the time come when, in pronouncing sentence for capital crime, the judge will solemnly say: "And now you are sentenced under the laws you have violated, to pay the righteous penalty of your crime. You will, therefore, this day choose the method by which you prefer to die for the benefit of Science and that society you have wronged, that, dying you may serve mankind better than when you lived, and in part at least, make propitiation to the world and to God for your great

crime, and may God have mercy on your soul." Let the condemned then choose whether by poison, by inoculation of disease, by vivisection or electricity.

Give the condemned murderer a chance to make some

atonement for his crime before he goes hence.

The Bishop Autopsy.-

Drs. J. A. Irwin, Frank Ferguson and H. Hance were arraigned in court on Tuesday, on indictments for misdemeanor, found against them by the Grand Jury for "unlawfully making a dissection of the body of Washington Irving Bishop, on May 13th, without authority of law, and not in pursuance of permission given by the deceased." They pleaded not guilty, and were each held in \$500 bail.—New York Journal.

It was claimed by the mother and some of the relatives and friends of the deceased mind-reader that he was not dead, but only slept in cataleptic simulation of death.

But Bishop had not the precursory rigidity of catalepsy, and his physicians were too familiar with neuropathic symptomatology to make the mistake even of taking a

trance subject for a cadaver.

Bishop's spells during life were syncopal, possibly epileptoid. His fatal illness was epileptic as the autopsy revealed. He stimulated, as Foster did, when he needed sleep and ought to have slept. Antipyrine too in large quantities is said to have been a favorite self-prescribed remedy with him for nervousness and cephalalgia. Bishop was imprudent, wore himself out, and died of the consequences of cerebral exhaustion.

Dr. I. N. Kerlin takes Six Months' Vacation.—Dr. I. N. Kerlin, for the past twenty-five years the accomplished superintendent of the Pennsylvania Training School for Feeble-Minded Children, at Elwyn, Penn., and well known to our readers by his contributions through our pages to neurological subjects allied to his specialty, is taking a six months' vacation in Great Britain and on the Continent of Europe. Dr. Kerlin is a close observer and will glean all that is worth gathering that is excellent in foreign institutions, and when he comes back home again his own institution and the profession will profit by his visit abroad.

Correction.—In the April number, department of "Selections," may be found a note as follows, to one of the captions: "We place these among the neuratrophic lesions." This note was intended to refer to certain nerv-

ous affections of the skin which we placed under the caption of "Proper Names for Nervous Diseases," but the printer attached it to the caption erroneously, making it refer to all.

Gurney Cottage Closed.—The many readers of the ALIENIST will regret to learn that this excellent summer home for the insane and nervous, so successfully conducted by Dr. J. C. Hall, the well-known Superintendent of the Friends' Asylum for the Insane, near Frankford, Philadelphia, will be closed this summer. But it is some compensation to know that Dr. Hall still remains at the parent institution near Philadelphia, one of the best small institutions among the many we have visited in this country, and Dr. Hall, besides his eminent professional abilities, is in every way personally qualified to make the Friends' Asylum what it has long been reputed—a home of comfort and cure for the mentally maimed.

Dr. C H. Nichols and Wife Sail for Europe.— Dr. C. H. Nichols, accompanied by Mrs. Nichols, sailed on the Umbria, for a four months' trip through Great Britain and the Continent. Dr. Nichols' observations and investigation will be utilized in the erection of the new asylum at White Plains.

During Dr. Nichols' absence abroad Dr. Samuel B. Lyons, the present Assistant Superintendent, will act as Superintendent. Dr. Lyons has been attached to Bloomingdale for three years, previous to which he was connected with the Government Asylum at Washington.

Suspension in Tabes.—Bernhardt reports 19 cases with 220 suspensions by Sayre's apparatus (*Deutsche Med. Woch.*, May 16). Almost always it diminished or relieved entirely the lancinating pains, improved the gait, lessened the ataxia, improved the condition of the bladder and also the mental and bodily functions.

Charcot and the neurologists of this country are taking up this Russian remedy with enthusiasm, and two lives have lately been lost by too much extension—one that of a physician. But it is a good therapeutic measure,

nevertheless.

IN MEMORIAM.

JORDAN W. LAMBERT—On the 6th day of last January died our friend Jordan W. Lambert, who was born in Alexandria, Virginia, on the 2nd day of December, 1851. Lambert's energy had won for him wealth and fame. As the originator and manufacuturer of Listerine his name had become as familiar as that of the great surgeon whose

name he gave to his unrivaled preparation.

We knew Lambert well—were his medical adviser before he became famous, and attended him in his last illness. He died too soon, of too much energy for his organic power. He was a man of large projects and delicate frame. The machinery of his organism shattered him to pieces, for it was always in motion. He died of nervous exhaustion. He might have taken care of his own legitimate business, but he was public spirited to a fault and worked for the public weal when he ought to have slept. He was a man of integrity, ability and virtue. The chief mistake of his life was in recognizing no limit to his powers when he had work of his own or for others to do. He was unselfish and faithful to his friends, his family, his business and the public weal. His standard in catering to the profession was high—as high as though he had been bred a physician. He had a real pride in Listerine and would have kept on manufacturing it if it met professional approbation, even though it might have been without profit, which was far from the fact.

[This was inadvertently omitted from the last number. Since it was written his wife has followed him, and his

late home is indeed desolate.]

REVIEWS, BOOK NOTICES, &C.

ELECTRICITY IN THE DISEASES OF WOMEN. By G. Petton Massey, M. D., Physician to the Nervous Department of the Howard Hospital; late Electro-therapeutist to the Ortheopedic Hospital, etc., etc. Cloth, 210 pp. Price \$1.50. F. A. Davis, Publisher, Phila.

The scope and boldness of this book may be gleaned from the follow-

ing extracts from the author's introductory pages:

"A dawning reaction from the ultra-mechanical methods of the followers of the late J. Marion Sims was probably instrumental in first attracting earnest attention to electricity as a therapeutic agent in gynecology. It was readily seen that in it lay the possibility of a wide range of direct applications, generally of a harmless nature, and better calculated than any other to touch whatever neurotic element might lurk in a case. Of late, however, a more serious use of the remedy has been added to these milder therapeutic applications, constituting indeed a truly surgical use of electric force. I do not allude to the galvano-cautery, in which the remedial agent is merely caustic heat which happens to be generated by electricity, but to the chemical action of a strong current brought to a focus on the bared surface of a single pole, which has been placed directly at the seat of local disease. The possibility of using currents of the chemical energy wielded by one hundred, two hundred and three hundred milliamperes in this perfectly safe and almost painless manner, was first pointed out by Apostoli, in descriptions of his method of treating fibroid tumors of the uterus. More recently this same powerful but easily-controlled surgical agency has been employed for the direct treatment of metrorrhagia, chronic metritis and endometritis, stenosis of the os and cervical canal, subinvolution, chronic pelvic indurations, etc., and a conservative view of the results gained is that a most important addition has been made to surgical gynecology.

"At the present time, therefore, an unusual degree of professional attention is being directed toward two essentially different means of rendering electrical applications useful in the diseases peculiar to women, the one consisting of a therapeutic use of faradic and weak galvanic currents applied percutaneously or directly to the vagina, uterus and bladder mainly for the relief of pain—a symptom that prompts most of the plastic and resectional operations, and yet so sadly persists after many of them—and the other a surgical disintegration of diseased tissues and neoplasms by strong but accurately-measured currents, the disintegration being so controlled as to cause a mere surface cauterization at a circumscribed spot on the mucous membrane, or to produce an extensive, wholly internal

destruction within the body of the tumor.

"While it cannot be said that the first-mentioned method of using electric currents in gynecology has not already been extensively tried, it is yet true that circumstances were against anything like an adequate

determination of its value until a very recent date, as the want of reliable means of measurement and dosage made intelligent experiment impossible. Since the general adoption of the milliampere meter (although it can hardly be said to be in sufficiently general use yet), a great stimulus has been given to such applications, and their true field will doubtless be speedily outlined. The scientific use of strong currents, on the other hand, is admittedly in its infancy, and owes its professional favor to the very recent writings of Apostoli and others abroad, and of numerous enthusiastic gynecologists in this country.

"It is in the use of galvanic currents especially, whether weak or strong, that recent progress has been attained, and its key-note has been the use of a single pole for treatment, the circuit being completed by a nonactive pole on the surface. Definite results can thus be secured and accurately predicted beforehand, for the basis of the work has been shifted from theory to observed fact. We know much of the effect of each pole upon tissues in immediate contact with it—the polar effect—and but little of the more distant interpolar effects. Gynecological applications of electric currents have, therefore, a distinct advantage over neurological applications—at least until such time as neurologists shall practice the same boldness in local treatment.

"This surgical use of strong currents within the pelvis has already been found to be a desirable substitute for a number of both major and minor gynecological operations—such, for instance, as laparotomy for fibroid tumors and for hydrosalpinx, curetting, trachelorraphy, application of styptics, caustics or caustic solutions to the endometrium, etc., the current application being in each case either less fraught with peril to the patient, more quickly curative, or more easily applied and controlled. It is an absolute substitute for sharp curetting in all cases, and where it can be conveniently performed, this operation is unjustifiable in the future. As compared with caustics and caustic solutions, it possesses the advantages of being easily and absolutely controllable, permitting either an alkaline or an acid caustic action to begin gradually and be terminated at any desired instant, accompanied at the same time by a distant action of a salutary nature. The caustic effect, moreover, may be confined to the interior of the uterine cavity, leaving the cervical mucous membrane untouched, or vice versa, by the use of a form of intra-uterine electrode devised by the author. As a means of controlling hemorrhage from the uterine cavity, whether due to malignant disease or not, powerful positive cauterization is unequaled.

"It is true that a full test of the practical utility of electricity in diseases peculiar to the female sex must show that it is an agent capable of being properly applied without the need of a very great amount of technical skill. The main purpose of this little book is to show that the necessary skill can be readily gained by anyone—even the busy general practitioner—if he will but consent to study the remedy in a practical way, and use reasonable care and circumspection in performing the operations. Unfortunately, such a student must also consent to abstain from reading any but the most recent works upon electro-therapeutics, as a certain result of a perusal of many of them is a failure to comprehend the present position of electrical science. To

the gynecologist it is by no means a fault of these works that they are written from the stand-point of the neurologist, for there is no essential difference in the two kinds of work. The real difficulty is a lack of clearness and simplicity that of necessity attended all electro-therapeutic writings before the introduction of the meter. Since its adoption the most intricate laws of electrical science are capable of demonstration to the senses without calculation or figuring, and one may handle a current properly without being an accomplished theoretical electrician.

"But while making light of the necessity of much theoretical knowledge, I do not wish to be understood as implying that an intelligent comprehension of currents and their behavior is not essential to anyone who would subject a woman to the influence of the heavy doses now in vogue.

"Practical experimentation with currents not only insures their easy control in subsequent work, but furnishes the best means of comparing the three medical currents—the galvanic, the faradic and the franklinic; and but little handling of this sort is needed to convince anyone that each is an essentially different article of the materia medica."

A better title for this book would have been "Electro-Surgery in Diseases of Women," as the author's plan is to employ electricity not so much in a physiological manner to invoke the vis medicatrix through nature's physiological processes stimulated, restrained, regulated—but through the distinctive use of strong currents to supplement and supplant the knive.

The author is bold, confident and aggressive, and we think in some respects needlessly rash. He is an innovator, who claims good results for his innovations on established electro-therapeutic usage. The results given demand for the book and its author's views respectful consideration.

FEES IN HOSPITALS. By Henry J. Bigelow. From the Boston Medical and Surgical Journal, April 18, 1889.

We do not assent to this proposition: "Whatever a medical officer may think of the right to receive fees from patients for services rendered within the walls of a charity hospital, there is no doubt that its practice would be disadvantageous to the institution. The writer desires to place permanently on file a few of the hitherto unwritten arguments against such fees." Hospitals, like hotels and other institutions, prosper best under an adequately paid service, and the charitable feature in connection with hospital alms-giving is best promoted and fostered by having associated with it, directly or indirectly, a sufficient remuneration to make the physician feel that his labor is not all and exclusively charitable and not all financially vain.

When the merchant gives he bestows not all, but a portion, and an infinitely small portion of his store, and the recipient or his family or friend are usually among his customers at the time, or have been or will be. He does business as well as charity at the same stand, and his charity promotes his business. Why should not a doctor do likewise? Dr. Bigelow asks too much of the hospital physician, and views like those expressed

in this paper, mislead the public into expecting and exacting too much of the profession, as it habitually does both within and without our public and corporate charities.

Du Role de L'Heredite Dans l'Alcoolisme. Par Paul Sollier, Interne des hôpitaux de Paris. Un volume in-18 jésus. Prix: 2 fr. 50 Vient de paraître aux bureaux du Progres Medical, 14, Rue des Carmes.

The role of heredity in chronic alcoholism and the hereditary entailments following even temporary alcoholic excesses have, for a long time, been of interest to pathologists, physiologists and clinicians, and the organic hereditary sequences of long-standing parental indulgence in strong drink have attracted the attention of philosophers since the time when it was first said "the parents have eaten sour grapes and the children's teeth are set on edge." The book before us essays to show and has succeeded in demonstrating in a convincing manner the existence of certain neuropathic sequences of chronic alcoholism, such as idiocy, imbecility, epilepsia, etc. But with these, as the result in descendants of inebriate parents, the profession is already quite familiar. The author, however, has added new proofs to substantiate a subject still mooted in some few quarters, but which should be no longer doubted. The book demonstrates the existence of alcoholism as a disease, and not a habit. This is shown in the fact that descendants of alcoholics are not necessarily themselves They inherit nerve instability and marked neurohereditary inebriates. pathic conditions, and that when these do not appear, alcoholism does.

The interchangeability of alcoholism and disease, and of disease and alcoholism, as shown in the work before us, as well as in the writings of Magnan and Wright, Mason, Crothers, Norman Kerr, and others, who have specially studied this subject from a clinical stand-point, is made so plain in our judgment as to leave no room for further profitable discussion of the subject.

The chief value of this book, therefore, is in the proof indubitable which it gives that alcoholism descends as a neuropathic condition, and not merely as a drink habit, which might be regarded but for these neuropathic sequences, as a physiological, or at most, a physiologico-pathological condition.

Physiological Notes on Primary Education and the Study of Language, is from the facile and learned pen of Dr. Mary Putnam Jacobi, issued in the well-known handsome style of the Knickerbocker Press, Putnam's Sons, New York and London.

In this interesting and sensible book a new story of "Mary's Little Lamb" is told in a new and highly instructive manner.

As in the old story, the little lambs of our household flocks are ever with Mary, the authoress, and their welfare is her constant concern. To anyone who will read the little book it will appear evident that "Mary loves the lamb" about which and of whom she speaks, and knows what is best for its educational welfare.

We quite fully concur with the gifted authoress, who is one of the most talented and accomplished members of the medical profession, in the view she takes of the proper methods of juvenile education. Her plan of

teaching the young idea how to shoot is practical and practicable because it is physiological; and we are in favor of "shooting" the old methods, especially when the linguistic educational folly is persisted in, of begin, ning the child student (so soon as it has memorized the declensions and conjugations) with the Commentaries of Cæsar on the Gallic War.

The book is in every sense a good one, pleasingly and forcibly written and it ought to be read by all interested in the proper education of children.

It is time the monastic methods and the pedantic teaching of the past should be supplanted by the more natural, philosophical and physiological plan suggested by the gifted authoress.

THE RADICAL CURE OF HERNIA, by Henry O. Marcy, M. D., of Boston, is one of Geo. S. Davis' "Physician's Leisure Library" series, and sold at twenty-five cents per copy, which accounts for the cheap style of binding, but at which price we are at a loss to explain the undoubtedly good typography, good paper and excellent character of the work, unless the book is sent out upon the mercantile principle of exceedingly small profits and very large sales.

The author's name is a guarantee of the sterling merit of the work. Whatever Marcy writes is worth y of being read, because profitable both for instruction and reflection.

The author employs the buried antiseptic animal suture, and the surgeon who reads the book carefully through, will, we think, coincide with the author in his conclusion that "the surgery of the future will include a large percentage of the sufferers from hernia, which the conservative surgeon of to-day relegates to the truss-bearing army of invalids." The book deserves a better dress than the publishers have given the copy sent us, and it should bring a higher price.

THE JUNE NUMBER OF THE CENTURY MACAZINE contains an appreciative paper by Margaret J. Preston, the Southern poetess, on "General Lee after the War." She says, "Nothing could exceed the veneration and love, the trust and absolute loyalty, which people and soldiery alike had manifested towards him throughout the struggle. But it was after the war had closed that the affection of the people seemed more than ever a consecrated one." The writer lived near General Lee from 1865 until his death in 1870, and she relates many interesting and heretofore unpublished anecdotes of his life during that period. The height of wood-engraving is shown in late numbers of the Century. Mr. W. J. Stillman, the art critic, writes to the New York Evening Post that M. Hébert, Director of the Académie Française at Rome, "one of the most thoughtful of modern French painters, and perhaps the best representative still living of the great poetic French school of art," says of Mr. Cole's engravings now appearing in the Century, that "he had never seen such work on wood, and did not suppose wood-engraving to be capable of it." Specimens of the work of such pre-Raphaelites as Cimabue, Giotto, Spinello, and others have already been shown. The later work is to include admirable specimens of the art of Perugino, Leonardo, Titian, Michael Angelo, Raphael,

Paul Veronese, Correggio, Tintoretto, and many other well-known names—the masters of the world's art. Leonardo's "Mona Lisa" and "The Jeweler," Titian's "La Bella," "The Man with the Gloves" and the "Entombment," Rembrandt's "Supper at Emmaus," Velasquez's "L'Infante Marguerite," and Albertinelli's "The Salutation," are among the engravings to come.

The Youth's Companion has come so long and regularly to our sanctum that we have become quite familiar with the instructive, elevating and entertaining character of its contents. It is a good periodical for hospital as well as home reading. It is in place at the bed-side, the fire-side, the camp-fire and the school-room, and as such we commend it to our many readers. As a short sample of the solid instruction it contains, our readers will appreciate the following extract from the "Recollections" of Lord Lennox on the subject of the sleep capacity of great men, given incidentally in an article entitled "Coolness in Danger." The Duke of Wellington's capacity to sleep in every emergency when he could get a chance to slumber is given first:

"The French, with a fresh force double that of the Duke, were closing in upon his jaded troops, one stormy night in Spain. Wellington completed his preparations, and then turning to a scout, asked: 'How long will it be before they can reach us?'

" 'Half an hour,' was the reply.

"'Then I can go to sleep,' he said, and wrapping his cloak about him. he dropped where he stood in the muddy trench and in an instant was asleep. He woke when the bugles of the enemy sounded in his ears. Napoleon, his soldiers were accustomed to declare, not only slept soundly when under fire, but even when riding on horseback. General Grant also had the same faculty of falling instantly asleep, even in the face of danger. This singular physical trait is not more a proof of courage than a cause of it. The brain, in these brief moments of sleep, finds new vitality and wakens ready for the conflict again."

Science is another of the non-medical publications which is always welcome to our table, and we are gratified to be able to note the marked improvement during the past year in its popular features, for these diffuse its circulation among others than those whose livelihood is gained by scientific technique.

As a sample of matter which it often contains of interest to readers of the ALIENIST, we extract from a recent number the following well-written editorial article:

"PSYCHIC CURES.—EARLY PRACTITIONERS OF THE HEALING ART;
BENEFITS OF HYPNOTISM.

"Our first record of the practitioners of the healing art describes them as invested with the priestly function, thus making the cure of physical ills a result of intellectual and religious influence. When reading the records of the past in the light of modern knowledge, we can trace almost at every point the very marked influence of mental states in the cure, sometimes described as miraculous, of disease. The repute of drugs alto-

gether harmless, or of the physician who gave the drug, is often due to the successful action of the patient's own belief upon his susceptible system. And quite as truly are the wonderful cases of the infliction of ills by secret curses and superstitious rites to be accounted for upon the same principle.

"In more recent times the success of a host of quack remedies, supported by quasi-scientific proofs, is to be referred to the same influence of mind upon body. The existence of such influence, and its great power for good or ill, is fully admitted by modern science; its practical application has however, been left almost exclusively to charlatans and empirics. Naturally, the physician has encountered the general fact of mental influence, and more or less unconsciously profited by its benefits, but the outspoken recognition of psychic states upon physical ills has been rare, owing to the endangering of one's reputation to which such a step would lead. The result has been that a special sect, ignorant of all rational physiology, has taken up the valuable kernel of truth and surrounded it with an enormous shell of fantastic doctrines, semi-religious and altogether unscientific, in which the original kernel is warped quite out of recognition.

"In recent years the question has assumed a more scientific aspect, owing to the light shed upon it by the researches in hypnotism. In this condition, in which suggestions are obeyed with abnormal readiness, it has been shown that functions ordinarily beyond voluntary control can be influenced, and thus a way be opened up for acting upon disturbed functions and diseased conditions. With a sensitive subject, a burn can be suggested at the spot where coin touches the skin, and the inflammation. the scar, and all, will result. Further, if the suggestion be given that of two wounds the one will heal very quickly and the other slowly, one may find the inflammation almost entirely gone from the one on the following day, while on the other it will be evident for days or even weeks. If nature's process can thus be hastened or retarded, though in a somewhat abnormal condition it is true, why should it not be possible to systematically utilize this power in the case of real ills? Isolated examples of such attempts can be pointed out. Dr. Esdaile, in India, performed many operations in which hypnotism was the only anæsthetic used, and Dr. Liebault, of Nancy, has for many years been treating his patients by hypnotic suggestion whenever it seemed desirable. The writer has recently had an opportunity to witness the well-systematized procedures of two physicians at Amsterdam-Drs. Van Renterghem and Van Eeden -in the same direction. These physicians regard hypnotism as a form of sleep very variable in intensity, and passing imperceptibly into a normal sleep. They find a very large percentage (about 75 per cent. or more) partially susceptible to its influence, and make no claim beyond the power to appeal by this means to natural restorative processes where the usual means of treatment have been of little avail. The process is a gradual one, and the suggestion must be very frequently repeated before a complete cure is effected. There is no element of the mysterious about their proceedings, but simply a methodical attempt to test the powers of mental influence upon physical ills.

"As just noticed, they recognize different degrees of hypnotic sleep

and regard the memory that the subject retains of what has been done during the hypnotic condition as a convenient point of distinction between them. In the lightest sleep the patient remains fully conscious of what has been going on and can give an accurate account of it. When the sleep is deeper, his remembrance is vague, and hints must be given in order to recall the events. In the deeper sleep all recollection is gone. Of 178 persons, only seven could not be hypnotized, and seventy-nine were thrown into a deep sleep. The procedure is very simple and depends entirely upon the acceptance of a suggestion. The eyelids are closed and held for a moment, the patient being told to go to sleep; or the patient fixates the physician's eye for a moment, with the same result. A breath upon the eyelids or touch upon the nose easily awakens the sleeper. While in this condition, the suggestions are given that the pain will be gone, that the power to move the paralyzed limb will return, that sight or hearing will improve, that hallucinations will not recur, and so on, to suit the requirements of each case. In cases of paralysis the limbs are moved for the patient, gradually extending the range of the movement and suggesting the same motions to be effected voluntarily by the patient. In cases of partial blindness, exercises in seeing and distinguishing different objects are made under hypnotic suggestion. In brief, each case must be treated individually and it requires the utmost tact, aided by a pleasing and impressive manner, to accomplish the best results. To the effects of such indirect suggestions every candid physician will testify.

"As to the time of cure, this depends upon the special malady and the individual. Sometimes a single suggestion will suddenly effect an almost complete cure, while in other cases the progress is very slow. The more gradual cures are to be preferred as being more in harmony with nature's methods. The kinds of disease most readily yielding to this treatment at once suggest the processes here involved. Hysterical affections make up a considerable portion of the cases treated, and in these the combined psycho-physiological disturbance is more mental than physical. But paralysis, rheumatic troubles, palpitations of the heart, digestive irregularities, and nearly all the ills that flesh is heir to, are found upon the list of successfully treated cases. They are all, however, functional troubles. In cases of organic trouble it is evident that restoration is not more possible by this method than by another. The difficulty is, that severe functional troubles may take the appearance of being organic, especially in cases of complicated disease. It must be admitted, however, that the benefits of hypnotic treatment have a much wider extent than what are generally understood by hysterical affections. Of 162 cases treated, 91 are regarded as restored to health, 46 have improved, and only 25 have been treated without avail. The main point at issue will probably be the permanence of such cures. The question has not been studied sufficiently long to admit of a positive answer, but the proper basis for a conclusive verdict is rapidly being accumulated. As far as the evidence goes, it points to as large a percentage of permanent cures as is effected by treatment by any other method. Cases are not unknown in which, after all skill has been applied, a sudden shock or accident has effected a complete and permanent restoration. The sudden cures of hypnotism may be

regarded as affiliated with this class. The far more numerous gradual cures are naturally subject to relapses, and repeated suggestion is necessary to continue the progress.

"Another point that will not fail to be raised is the danger incident to such methods. The dangers are real, and of many kinds, but they are all such as, in the hands of a skilled physician, are reduced to a minimum. The avoidance of unpleasant suggestions, an easy awakening from the sleep, the suggestion that no one else but the physician can hypnotize the patient—all contribute to a successful result.

"The entire question is one that the future must decide, but it should be recognized that attempts are now in progress to clear this very fertile field of the weeds that have grown upon it, and cultivate it assiduously for the advancement of science and the benefit of mankind."

CEREBRAL LOCALIZATION IN ITS PRACTICAL RELATIONS. By Charles K. Mills, M. D., Professor of Diseases of the Mind and Nervous System in the Philadelphia Polyclinic and College for Graduates in Medicine; Lecturer on Mental Diseases in the University of Pennsylvania; Neurologist to the Philadelphia Hospital.

This is a paper read by the distinguished author before the Congress of American Physicians and Surgeons, Washington, D. C., September 19th 1888.

It is the best and most complete of American contributions to the everincreasingly interesting subject. The author has our thanks for the pleas, ure he has given us, in affording us an early opportunity to go over this clear and facilely readable exposition of the subject.

"Suspension in the Treatment of Affections of the Spinal Cord," is the title of a recent paper by Dr. Alexander B. Shaw, Professor of Diseases of the Mind and Nervous Diseases, Beaumont Hospital Medical College.

The author presents the spring balance device similar to Hammond's modification of Sayre's apparatus and gives satisfactory and encouraging results. The author has taken pains to give a good *resume* of what has been done thus far in this field of neurotherapeutics.

"On the 15th of last January, Professor Charcot, of Paris, delivered a clinical lecture at the Salpétrière, in which he stated that he had recently been experimenting with the suspension treatment of locomotor ataxia, and had been obtaining very remarkable results. Charcot's lecture was published in *Le Progres Medical*, January 19th and February 23d, 1889, in which is graphically described the technical details of suspension, as practiced by him, with an ordinar Sayre's suspension apparatus.

"The fact that suspension is beneficial in the treatment of locomotor ataxia was discovered by Dr. Motchoukowsky, a Russian physician, in 1883, while treating a patient for spinal curvature, who was then suffering from ataxic symptoms. He observed that amelioration of the ataxia followed the suspensions made during the applications of the plaster jacket used for the relief of the curvature, and subsequently suspended other ataxic patients with like favorable results. This important discovery was chronicled and published in a brochure on the subject by Dr. Motchoukow-

sky, in 1883, in which considerable improvement was ascribed to it in twelve tabetic persons; also in various neurasthenias, independent of tabes, in which the sexual functions were re-established by this treatment. But, until quite recently, it has been almost barren of results."

The author further informs us from the records that "suspension in cord affections occurring secondarily to disease of the vertebræ was advocated, and practiced with good results, so long ago as 1826, by Prof. J. K. Mitchell, of the Jefferson Medical College, and has been employed for a number of years by Dr. S. Weir Mitchell in the same class of cases. The latter, indeed, about the time of Motchoukowsky's discovery, was induced to attempt suspension in two cases of spastic paraplegia in which no spinal caries existed; the excellent results obtained from it in pressure paralysis having led him to believe that stretching the cord, and thus altering its vascular conditions, even when signs of meningeal inflammation were absent, would helpfully affect both cord and membranes. Unfortunately, in these cases, no benefit followed; had it been otherwise, suspension would, no doubt, long since have been generally recognized as a useful adjunct to our scanty therapy in chronic degenerations of the spinal cord."

The results of Bernhardt reappear in this paper, together with the author's additional experience and the explanation of Althaus as to its physiological modus operandi, is reproduced and accepted as satisfactory, which explanation is here appended as it is in the paper:

"' HOW DOES SUSPENSION ACT IN LOCOMOTOR ATAXY?

"10. It has been ascertained that in tabes, posterior spinal meningitis habitually accompanies the pathological changes in the nerve tubes of the posterior columns. The pia mater is found congested and thickened at the level of the posterior columns, * * * it appears to me to be highly probable that part of the influence of suspension, by which the spinal cord is efficiently stretched, is owing to the breaking down of adhesions from chronic meningitis, thus allowing a freer transmission of nervous influence along the nerve tubes. * * * The neuroglia, from being originally soft and yielding, gradually, as the disease progresses, loses its cells and nuclei, becomes firm, hard and fibrous, and is liable to * Now it seems to me allowable to cicatricial shrinking. assume that by the process of stretching the spinal cord, the overgrown and unduly hardened neuroglia may be loosened and broken down, with the effect that those nerve tubes which have to some extent survived the sclerotic process are freed from compression, become better nourished, and may thus be enabled to transmit the nervous influence more efficiently than before. Apart from this, however, I have come to the conclusion that suspension has, in a number of cases, a beneficial influence on the medulla oblongata, as it stimulates the centers for vasomotor and cardiac action and * In a large majority of my cases the appefor digestion. tite and digestion have improved, and mental depression has been lessened or improved.

"'The forms of nervous disease for which my personal experience leads me to think that suspension is applicable are the following: 1. Locomotor ataxy in the second stage. 2. Paralysis agitans. 3. Spastic

spinal paralysis. 4. Amyotrophic lateral sclerosis. 5. Functional nerve prostration, more especially where there is feeble action of the heart; loss of appetite and severe mental depression.'

"The recent plausible explanation as to the action of suspension in tabes, offered by Althaus, indicates that permanent benefit may result from this method, provided that the further progress of the disease can be arrested by other means, and that it has not advanced to complete destruction of the nerve tubules; and that even where its advance cannot be thus stayed, temporary good may still be accomplished by suspension Althaus' ingenious explanation applies equally to other degenerative diseases of the cord than tabes, and if it is true of the chronic degenerations. in which the pathological changes originate in the nerve elements and the overgrowth of connective tissue is secondary, it is, theoretically, far more so of inflammatory processes which, starting in the connective tissue, cause, primarily, at least, far less damage to the nerve tubes. In chronic inflammations of the cord or its investing membranes which are stationary and are encountered before the contracting perineural tissue has, by compression done more than interfere with the nutrition and conductivity of the fibers, not irreparably damaging their structure, the effect of suspension should be curative; for, by stretching the cord and the thickened and adherent membranes, the inflammatory tissue pressing upon the axiscylinders will be loosened and broken down, setting free the latter and permitting them to resume their functions."

THE "TIMES" AND "REGISTER," BLENDED WITH THE "DIETETIC GAZETTE," bear on their new face the evidence of a happy journalistic union for publisher, editor and reader. We wish the new triune venture the abundant prosperity in full triplicate which the respective journals merited and achieved and which the new editor is capable of winning and achieving anew.

The new journal has a vigorous look and sprightly aspect that gives promise of a long life and a useful one to the profession, and though it is welcome, we hope we have not thereby heard or seen the *last* of Shoemaker.

CLINICAL OBSERVATIONS ON THE ACTION OF SULFONAL-BAYER. By Wm. Mabon, M. D., Utica, N. Y., Wm. H. Flint, M. D., New York City, Elon N. Carpenter, M. D., Amityville, L. I. W. H. Schieffelin & Co., New York. 1889.



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ORIGINAL CONTRIBUTIONS.

A Basis for Sanity and Insanity and Classification of the Insane.*

By H. A. BUTTOLPH, M. D., LL. D., Short Hills, N. J.

GENTLEMEN: A state of sanity is that in which the brain, the intellectual and affective faculties, act in a healthy and harmonious manner; also in which the self-control of an individual in feeling, in expression and in action, is duly maintained.

Quoting from a paper heretofore presented to the Association, I would say, "Insanity or mental derangement consists of a changed, unbalanced and uncontrollable state (by the will and under ordinary motives) of one, of many, or of all the faculties of the mind, resulting from disease of the brain; which may be functional or structural, acute or chronic in character, partial or general in extent, continuous, intermittent, impulsive or recurrent in its manifestation and progress."

CLASSIFICATION OF INSANITY.

Much time and thought has been expended in efforts to simplify, improve and settle on a perfect and permanent

[•] Read at the annual meeting of the Association of Medical Superintendents of American Institutions for the Insane, at Newport, R. I., June 18-21, 1889.

method of classifying insanity. The subject has been considered important alike by ancient and modern medical authors and teachers, but specially so by men of our own day, who have written on the subject or who have been engaged in the treatment of the insane in institutions for their care and cure.

Without attempting to recall or criticise any of the numerous plans offered for acceptance, which are generally understood, I will in the briefest manner possible, state what I regard as the true method of placing the subject on a practical basis. In doing this, in view of known facts in the physiology of the brain, I feel warranted in assuming that while the brain appears to be a single and indivisible organ homogeneous in structure, that it is, nevertheless, composed of various regions and parts, destined and endowed by the Creator to develop and manifest the various faculties of the mind, intellectual, emotional, etc., together with all other powers required to bring them into harmonious action with the objects and subjects to which they severally relate in this life.

This being true, it is needful only to show that such basis is applicable alike for considering and explaining mental phenomena as they appear in the normal or healthy condition of the brain and in their disordered state, from disease of that organ.

Insanity in its simplest form embraces the organs of one or a few faculties, but modified in its phases, first by the nature of the physical disease present in the brain, and secondly, by the peculiar mental function of the part or parts affected. Just here it is apparent how failure has originated on the part of physiologists, pathologists and mental philosophers, to perceive and appreciate the importance of the associated and interdependent action of the mental faculties that exist, alike in their natural and disordered state.

By carrying out the comparison briefly, between the working of the sane and the insane states of the mind, we are able to apply the principles of the former to correct prac

tice in the disordered condition of the latter, thus relieving the subject of much of its apparent intricacy, and showing the relative importance or non-importance of incidental states, alike in health and in disease.

What then is the obvious truth in reference to the relations between the brain and the mental faculties in this life? Also, in what sense and to what extent is a correct basis given for classifying physical and mental phenomena, and in explaining the relation of each faculty and class of faculties to all others, in these two states or conditions of the mind?

In pursuing this course in relation to sane persons, I would first inquire what practical advantage would result from efforts to associate or classify their mental states in tabulated form for any object connected with social, civil, political or other life? Using the greatest degree of effort possible to utilize resemblance in making up classes of men and women for practical objects little progress would be made or benefit derived from the attempt. Persons would continue to exhibit the characteristics peculiar to their developments of brain and mind, and remain identified with the niche to which they belonged, yet they would not and could not, with practical advantage, be considered in classes.

In making efforts to classify cases of insanity or disordered mental action, two things are to be noted. First, the type of the brain disease present and the functional office of the part affected. By the first the pathology of the disease in a particular case is determined, while, by the second, the mental symptoms, whether appearing singly or in combination, will be accounted for and explained in the best manner practicable. In many or most cases, especially in the chronic forms or stages of the malady, the mass of mental symptoms present may be fitly compared to the wandering thoughts of an imperfectly developed sane mind, and should be considered too incidental and trivial to require attention, as their association for scientific and statistical purposes, would be valueless.

The question then recurs, as to the sense and extent to which cases of insanity may or can be classified with scientific interest in regard to statistical results, or with practical advantage in reference to medical, mental and moral treatment. In regard to the numerous classifications heretofore made and that are now in use, it may be said that they appear to have been adopted without reference to the fact that the brain is a *compound* organ, consisting of many parts having as distinct functional offices to perform as have the organs of the special senses. In confirmation of this view of brain function, I quote from Charcot, one of the most distinguished modern physiologists, as follows:

The encepha'on does not represent a homogeneous organ—a unit, but rather an association or a confederation, composed of a number of diverse organs. To each of these organs belong distinct physiological properties, functions and faculties.

GENERAL FORMS OF DISEASE.

Insanity is usually attended by one of three forms of disease in the brain, viz., by that connected with acute, chronic or perverted action; while the mental forms, from the number of faculties based upon it, and therefore, liable to be involved, may be equal to the number of individual organs and parts of the brain through which they are manifested, together with the numberless combinations in action of the parts affected.

To these should be added, also, the varieties resulting from the diseased state of the organs of the special senses (which should be associated with the organs of internal faculties), and still further, with morbidly-perverted states of the nerves of sensation and motion; and finally, the condition of all bodily organs and parts, which, alike in states of health and disease, are in sympathetic relation with the brain, modifying its functional action in many ways, and occasionally, suspending its state of conscious activity altogether, for longer or shorter periods of time.

Insanity, with acute disease of the brain and its membranes, is usually attended by pain in the head, a general febrile state, frequent pulse with checked and disordered secretions. The location of the brain disease in the beginning, progress, and often in its termination, is inferable from the character of the mental symptoms, because they indicate the nature and number of the organs of the brain involved, the diagnosis of which, in many recent cases, terminating fatally, may be confirmed by autopsy. Thus in one case of acute insanity, the organs of the intellectual faculties, embracing the perceptive and reflective powers, are chiefly affected, and the mental symptoms are in conformity thereto. In a second instance the disease of the brain begins or extends to embrace the organs of the affective faculties, as indicated by the mental symptoms, giving rise to disturbed states of the moral and religious sentiments—of the selfish or social feelings; while in a third. the animal passions and resentful impulses are in a morbidly active state, the last forming what are considered and called "typical cases of acute mania." As the terms acute insanity and acute mania refer to disease of the brain of the same character or type, the advantage of the former consists in the facility it gives for locating the disease in the brain, by the mental symptoms. Hence it would be said that the case was one of acute insanity, and that the disease in the brain on which it depends is located in the frontal or intellectual region. In other instances it would be acute insanity with marked disorder of the religious, the social or the animal feelings, as the case might be, and located in the regions thus indicated. In still another case, the type of the physical disease being the same, the acute form would be characterized by marked depression of the feelings, instead of great exaltation. Hence, according to phraseology heretofore and now in use, this would be called acute melancholia, implying a difference in the pathology of the brain disease from that

of acute mania. In point of fact, however, this is not true, the difference in the mental symptoms depending, as in other cases mentioned, on the function of the part of the brain affected, which in this case is the region of cautiousness. The excitement of this from acute disease, causes timidity, anxiety with great depression of feeling, and when combined with morbid action in the region of conscientiousness, leads to the deepest shades of religious melancholy, resulting often in strong suicidal tendency.

To designate this form of the malady as acute insanity with morbid depression of the feelings, not only gives a correct impression of the pathology of the disease of the brain on which it depends, but also suggests the line of medical and other treatment best adapted for its relief. Hence, if cases of so-called "acute mania" and "acute melancholia" are not different from each other in pathology and treatment, the expediency, even the necessity for abolishing the use of these terms, to avoid mistakes, is plainly apparent.

The same principle also holds good in chronic forms and stages of mental disorder. Except in rare cases, the nature of the morbid action in the brain causing insanity, is the same in kind, from similarity in the brain-substance, in various regions and parts, while the difference in the mental functions of its many parts, taken singly and in combination, accounts as before stated, for the infinite diversity of thought and feeling in the sane mind, also, for the multiplicity of minor phases in the mental action of the insane.

In this connection, it may be observed further, that the mental faculties, particularly those of the affective and animal classes, are subject to morbid perversion in their manifestation, as distinguished from the unbalanced states before described, resulting simply from morbidly increased and diminished functional activity and power. This form or phase of mental disorder may appear in the working of a single faculty or of a class of faculties

or feelings, and exist independently of special disorder or disability of those of the intellectual class; and will account, naturally, for the phenomena presented in the large list of cases vaguely and inaccurately called moral insanity. In many or most of these the disease of the brain on which they depend is local and comparatively partial in extent. This form of disease may also be acute and temporary, or chronic and permanent, as in cases previously described. Under its influence any or all of the feelings are liable to experience or suffer from otherwise inexplicable states of aversion and change from their normal state, in regard to persons, subjects and objects to which they naturally relate. Thus the grave may become preternaturally gay-and vice versa-the highly moral and religious, profane and blasphemous-the mild and gentle, irritable, suspicious, harsh and resentful -while in others, the domestic feelings may become estranged from their proper objects, and revel in degrading abuses. Still further, the meek, timid and hesitating, may become pompous, arrogant and loud-spoken, while persons of delicate, æsthetic tastes may become coarse in feeling, vulgar in speech and action; even deplorably and disgustingly filthy in their persons and habits.

Aside from the variations in mental disorders from simple acute, chronic and perverted action of the brain, as the common and most frequent proximate causes of insanity, yet others and more obscure cases arise, which apparently, may depend more upon the modified or unequal nutrition of the brain structure, resulting, however, from what had gone before.

Among examples of this class are cases of unexpected recovery to reason after very long periods of disease; also the sudden loss and restoration to reason, without the apparent existence of disease of another kind. Possibly too, the obscure type of disease known as "general paralysis of the insane," the progress of which is so often uncertain and disappointing in its earlier stages, may be accounted for, to some extent, by this cause.

Thus the statement may be repeated, that while the brain as a whole is subject to few forms or types of disease, to vary the pathology of cases, yet unlike any others of the body, it is a compound organ in the sense of being made up of many regions and parts, each being endowed with special functionating powers. Through these, acting singly and in combination, mental phenomena of such varied character and unlimited extent are presented in states of health and in disease of the brain, as to make their classification, in either state, quite impracticable.

In view of this fact, I would propose only a general division of cases, based primarily, on the types of the brain disease, as acute, chronic and perverted action of the vascular and nervous systems, with such mention of the disordered faculties and classes of faculties involved as would tend, in diagnosing cases, to locate the disease of the brain in the part affected. This, when successfully carried out in the previous history, with results in case of death, confirmed by autopsy, would be of great practical utility in the study and treatment of other cases, both in a pathological and therapeutic point of view; but without this, neither of these objects, to any large extent, would be accomplished. While it may be deemed a praiseworthy custom to ascertain by pathological inquiries the condition of the brains of insane patients, whether the disease was acute or chronic in form; yet, if not connected with such careful observation as to determine the locality of the disease, mainly through the disorder of the faculties, intellectual, emotional or animal, during life, but little practically useful information, as before stated, will be gained.

It may be added also, in passing, that pathological inquiries in regard to disease of an organ so delicate in structure and so diverse in the functional office of its numerous regions and parts, is too complicated to allow of their being made with advantage, except by personshaving rare skill, from prolonged experience, in discriminating between healthy and diseased conditions, and who

have ample time to devote to the details of the subject.

Abandoning the use of the terms Mania and Melancholia, as ill adapted for the purpose for which they have been applied, I propose to use the term Insanity in their place, in all of the forms that may occur.

Insanity Acute consists of a morbidly-excited state of the vascular and nervous system and tissues, accompanied by the usual evidences of a febrile and nervous state. This being the general pathological condition present, we next indicate varieties under it, and speak of a morbidly-excited state of the perceptive and reflective faculties, which has been called "reasoning mania"—of disturbed religious feelings—of morbid conscientiousness and benevolence—of insane pride, obstinacy, vanity, jealousy and suspicion; also of sexual, passionate and destructive impulses, etc., etc. These several states may appear and remain singly for shorter or longer periods or may follow each other in quick succession, as the brain disease extends from one to adjoining, surrounding or more remote regions and parts of the organ.

In still another case, the symptoms may change quickly from either of the above forms of emotional excitement to a state of anxiety, fear and profound depression, constituting what may be regarded as a typical case or state of "melancholia," not because of change in the type of the physical disease, but because regions or parts of the brain have become involved, whose natural function, when excited, develop this form of mental disorder. It may be added here, that in accordance with the definition heretofore given the disease of the brain may be partial or general in extent, continuous, intermittent, impulsive or recurrent in its manifestation and progress. While this state of intense functional activity of the brain is continued, the case is usually regarded, when aided by judicious medical and other treatment, as hopeful for recovery, but if its progress is not arrested in time, the strength of the patient will be exhausted and a fatal result ensue.

INSANITY CHRONIC should, perhaps, be regarded rather as.

an advanced stage than as a distinct form of the malady, and is less curable, because it has in many or most cases, passed from a functional to a structural disease of the part or parts affected.

In this stage, as in the acute, the symptoms, though less irregular and urgent, are subject to morbid variations, according to the regions of the brain involved, and may also in its progress be liable to the same or similarly modified phases as those mentioned in the first.

Insanity from Perverted morbid action of the brain, in a degree resembles the acute and chronic forms, but it seems to depend on an anomalous functional action of the organs, indicated by *perversion* in action, mainly of the emotional faculties heretofore described.

At this point it may be remarked in regard to the form of insanity called in current phrase "paranoia," originating as claimed, from inherited defects or from imperfect evolution of the brain in early life, in which only slight exciting causes are required for its development; that the individuals thus classified differ so little from many of those embraced under the heads of Acute, Chronic and Perverted Action (very many of whose minds are also easily affected, through natural weakness and unbalance,) that it is alike impossible to establish and improper to claim, a distinction between them, of any practical importance.

Hence I would regard this condition as a frequent predisposing cause, rather than a genuine form of mental derangement.

It may also be added that in several instances, showing looseness of expression heretofore and now, exciting causes have been improperly named in plans of classification, as forms of insanity. Chief among these are injuries of the brain from violent means, intense heat and cold, tumors, exostoses, apoplexy, epilepsy, palsy, toxic agents of all kinds, including alcoholic stimulants, morphine and and other powerful narcotics, etc., etc.

For the purpose of condensing the language used in

carrying out the principles set forth, in aid of the diagnosis and treatment of cases, rather than with the hope of improving the arrangement of statistical tables of doubtful value, I venture to propose the following method of associating special phases of mental disorder, or those embracing one or few faculties, with those of a more general character:

Insanity Acute—(This includes "Acute Mania" and "Acute Melancholia.") It may be partial or general in extent, and continuous, intermittent, impulsive and recurrent in manifestation.

INSANITY CHRONIC—(This includes "Chronic Mania" and "Chronic Melancholia.") It may too be partial or general, as in the acute form; also manifested in the several ways mentioned in that.

Insanity from Perverted Morbid Action of the Brain, as distinguished from the preceding forms.—This is shown by morbid *perversion*, chiefly of the *emotional* faculties, including cases of so-called moral insanity.

OTHER FORMS-

Insanity attended by General Paresis.

Insanity " " Puerperal state.

Insanity " " Epilepsy.

Insanity " Palsy.

Insanity " " Acute Dementia.

Insanity " " Hysteria.
Insanity " " Chorea.

Insanity resulting in Chronic Dementia.

Insanity in Senile state.

Alcoholism in various forms and grades.

Mental Unsoundness—Congenital.—Idiocy, Imbecility, Cretinism.

Medico-Legal Problems of Inebriety, Illustrated by the Swift Case.*

By T. D. CROTHERS, M. D.,

Supt. Walnut Lodge, Editor Journal of Inebriety, etc., etc.

THE startling revelations in the scientific world are repeated in some degree in the sudden opening upof a new territory of medico-legal science, the Jurisprudence of Inebriety. Within five years the question of the mental soundness of the inebriate and his capacity to act or reason normally has been raised with increasing frequency in a great variety of criminal and civil cases. The rapid advances in psychological studies fully sustain the wisdom and necessity of scientific inquiry in this field. The medical profession have been suddenly called to determine facts and their meaning, and give advice along this new line of inquiry, without precedent, and opposed by public opinion and deep-rooted prejudice, and hence are often plunged into great doubt and confusion. As a result the strangest theories prevail as to what inebriety is and is not, theories of moral and legal accountability and responsibility, that presupposes a degree of psychological knowledge that can only be obtained after centuries of farther study.

To-day there are hundreds of persons awaiting trial or sentence for crime committed when poisoned by alcohol. There are hundreds of business contracts disputed and contested by law, made when the parties were intoxicated. There are hundreds of wills whose validity is questioned for the same reason. There are hundreds of divorce suits where the inebriety of the parties is the vital question on which the issue of the case turns. Grave questions of

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social science concerning pauperism, idiocy and criminality, turn on an exact knowledge of inebriety.

The great problems of the sale of alcohol, and its place in the world, will never be solved until this subject is studied exhaustively, both scientifically and medicolegally.

These are some of the topics in this new field of medicolegal science that cannot be ignored by the profession, or be answered by vague theories or dogmatic assertions. Every year these questions come to us for solution with greater urgency and importunity.

Although these topics have so recently come into medico-legal notice, and are so complicated with theories and superstitions, yet they have already divided into three distinct theories or points of view:

First. The ethical and moral view, which seeks an explanation of inebriety from the teaching of scripture and the opinions of theologians and metaphysicians. This view asserts that inebriety is only a phase of moral depravity innate in every life, and one that is susceptible of great growth and development, by willful neglect and gratification of all the animal instincts. Medico-legally the remedy is severe punishment, increased responsibility, prayer, conversion, and the application of moral suasion. A man holding these views on the witness stand believes the inebriate, in all cases fully conscious, and doubly responsible for all his acts.

The second is the legal view, which is practically an outcome or result of the moral theory. It assumes that inebriety is a phase of savagery or the inborn tendency to lawlessness, and giving up of all control and restraint; or the indulgence of the lower passions regardless of society, law and order. The legal remedy is severe punishment, increased penalties and suffering. The theory is to develop the higher nature of man by causing pain and suffering in the lower nature. In this way to rouse up the brain and will-power to regain control of the animal part. Three hundred years ago Lord Coke, of England, held that

inebriety always aggravated the offence, and the punishment should rather be increased. This has been the cornerstone of the legal view of inebriety up to very recent times.

The third theory is the scientific and medical view. This affirms inebriety to be a physical condition, the tendency of which is often inherited and also acquired. That this physical condition is always a disease, a modified or pronounced form of insanity. In other cases it is a positive symptom of insanity, and also that insanity is often a symptom of inebriety. It is a form of brain degeneration that, like other diseases, have distinct causes, development, progress and decline. It is also urged that the continuous use of alcohol always causes disturbances of brain circulation, and is followed by brain congestion, brain paralysis and impaired senses. The result of which is incapacity to realize the nature and character of acts, the judgment is defective, and the control is lessened and is not normal. Medico-legally this theory regards the inebriate as diseased and incapacitated to act sanely, to be treated as a sick man and placed under medical and legal care and control, until recovery or for life.

The two first theories assume perfect sanity in all cases of inebriety, and assert that the remedy is to be more severe punishment, and accountability to law and society.

The third theory recognizes a physical condition and demands a scientific study of each case before the remedy or treatment can be determined.

Another theory has been asserted, that in some cases inebriety was a vice at first, then later a disease. That in some cases punishment is the remedy, and in others medical care and treatment.

Practically and medico-legally this view assumes a degree of psychological knowledge, and power of discernment, as to where vice and disease join, that is absurd and impossible from any present knowledge. Such a theory defended on the witness stand is a sad reflection on the intelligence of the witness. Such are some of the

theories and stand-points from which the subject of inebriety is approached medico-legally.

The urgency and pressing character of these cases bring these different views into greater prominence daily.

While the confusion and doubt of the exact nature of inebriety is evident to every new advance of thought, it is obvious that it is due in a large part to the failure of physicians to study these cases independently. The dictum of judges, the teachings of theologians, newspaper views, and public opinion, are too often the sources from which medical men derive their views. This was very apparent in a contested will case at Trenton, New Jersey, where five medical men testified to the mental capacity of a chronic inebriate who willed his property to a mistress. The judge declared he should act on his own judgment, and decide the man unsound and incapable. In a recent case at Scranton, Pa., a man set fire to a church without apparent motive. Three physicians swore to his sanity, although he had delirium tremens repeatedly and was a chronic inebriate. The jury decided otherwise.

Questions involving the capacity or incapacity of inebriates can never be determined by any metaphysical theory of mind or morals.

It is an error for medical men to regard inebriety in any other except from a physical point of view. It is a question of facts and their meaning. Facts of heredity, of growth, of culture and training. Facts of diseases, of injuries, of degenerations both local and general, of surroundings and mentality, and of the entire history of the case, both physiological, psychological and pathological. From these facts only can any clear conception of inebriety be obtained.

The general problems which are presented in these medico-legal cases are, first: Was the person an inebriate, or one who drank spirits to excess at all times or at intervals? If this fact is established beyond question, his sanity and mental capacity may most reasonably and naturally be doubted.

Second. What was the mental condition and the circumstances of the person at the time of the commission of the act in question? Was he sane? Was the act reasonable and just in its effects and consequences? If not, the first suspicion is strengthened, and the insanity of the person must be assumed, and the legal theory must be reversed; the sanity must be proven, not the insanity.

Third. The medical man has only to gather the facts, and have the reasonable assurance of their accuracy. From this he can point out the most probable conclusions which are sustained by such facts. The question is one of preponderance of evidence, which, if it points to defective consciousness of act and conduct, and inability of control, is far more likely to indicate impaired mind or insanity than any other condition. The limits of scientific study will not sustain any theories of the exact degree of health and disease, and will not support assumptions of boundary lines of responsibility and irresponsibility.

Recently a notable case has illustrated this mediæval spirit of public opinion which insists on judging every inebriate as fully sane and competent to determine the nature of his thoughts and acts. The following is an out-line of the case:

John H. Swift shot his wife, July 7, 1887, at Hartford, Conn. In December of the same year he was tried and sentenced to be hung a year later, April 5, 1889. The Legislature was appealed to to commute his sentence to life imprisonment. The judiciary committee made an exhaustive examination of all evidence and new testimony offered, and reported in favor of commutation. Both houses of the Legislature voted to sustain the report and commute the sentence to life imprisonment. An adverse wave of public sentiment caused the governor to veto the action of the Legislature, and so influenced the members of one body that they failed to sustain their former vote. Hence, Swift was hung April 18, 1889. Swift was a chronic inebriate and had been drinking to great excess for weeks before the murder. The defence claimed that Swift was incapable of

deliberation and premeditation at the time of the crime, from the effect of continuous intoxication. No medical testimony was called. The prosecution claimed premeditation, malice, and full comprehension of what he was doing. The judge reiterated the legal fiction that an unsound mind is always one that cannot determine between right and wrong. Popular opinion, voiced by the press, insisted on sharp accountability, irrespective of every fact and circumstance, and clamored for Swift's death in the same unreasoning spirit that urged the execution of witches less than two centuries ago.

A review of the facts in this case will show the judicial blunder and injustice in the execution of Swist. Beginning with the heredity: Swift's father had an apoplectic seizure when twenty-four years of age. From this time up to death at forty (from pneumonia) he was a strange, erratic man. There are many reasons for supposing that he had used alcohol to excess in early life, although he was a total abstainer, and excepting the excessive use of tobacco at times, lived a temperate life. He married when about twenty-eight years of age, and was a school teacher, and finally an organist and music teacher. He suffered from intense paroxysmal headaches and attacks of insomnia. These headaches were always preceded by intense irritation and emotional disturbance. Dr. O'Flaherty, who was called to see him frequently, writes: "That the elder Swift was a peculiar man, either excessively elated or morbidly depressed. For years he was buoyed up with the hope of writing a work on music that would revolutionize the science, and talked excessively about it. He was abstract and suspicious, and magnified trifling oppositions into deep plots to break up his interests." His father died in early life, and his mother (Swift's grandmother) died of asthma. Swift's grandfather on his mother's side was a drinking man, but became a total abstainer in middle life, and is still living. His only son, a chronic inebriate for over twenty years' duration, is also living. Of the other children all were daughters. Swift's mother was the second child

The other three were excessively nervous, two of whom had hysteria, and one is now a nervous invalid. Swift's mother was always excessively nervous, but in fair general health up to the time of the sudden death of her second son (a great favorite), who died of convulsions at eleven years of age. The shock and grief of this event brought on what was called nerve prostration, which continued over seven months, until the birth of John H., the prisoner. During this time she was in bed and under the care of the physician. She was unable to sit up, complaining of great exhaustion, with faintness and inability to move. At the birth of John H. she became better, and seemed to regain her usual health again. Two years later another child was born, who died some months after of convulsions. A year or more after another child was born, who died from convulsions in a few days. In brief the hereditary history showed that Swift's grandfather was an inebriate, his father was mentally defective, and his mother suffered from nervous shock for months before he was born.

John H., the prisoner, was a weakly child, and when one year of age, fell out of a chair, striking on his head, and became unconscious. He was under a doctor's care for brain fever for some time, then recovered. When about three years of age he began to suffer from nasal hemorrhages, which came on at irregular periods. At six years of age he had an attack of scarlatina, and these hemorrhages greatly increased from this period. At times they were so severe as to require the aid of a physician, the attacks lasting from an hour or more to half a day. When eight years of age, they grew less frequent and of shorter duration, and finally disappeared. After puberty they returned and came on at intervals until death. While in jail two severe attacks occurred. Somewhere about five years of age, he suffered from severe night sweats, which continued up to puberty; frequently they followed the nasal hemorrhages, and generally they appeared after any excitement or special exhaustion. At puberty they disappeared, and severe headaches came on.

He complained of the latter all his life, but the excessive use of spirits for the last two years seems to have covered up this symptom. These headaches often preceded the nasal hemorrhages, and in many instances followed them. He would go to bed and have a fever, be excessively irritable, and next morning would wake up well. At times, these headaches would last a day or more, and he called them bilious attacks. Dr. O'Flaherty, who was called, recognized their constitutional character and intimate relation to the nasal hemorrhages and night sweats.

As a boy, Swift was dull, delicate and rather stupid; when he grew older he was excessively nervous, and active in some respects. He was the companion of his father and seemed very devoted to him. When sixteen, his father died, and from this time he drifted rapidly into bad company and low associates, and after a year of unsuccessful effort to restrain him, his mother had him sent to the Reform School at Meriden, Conn. From the statement of friends, he at this time showed a strong fascination for low society and disinclination to work. He seemed weak and childish, more than willful and headstrong.

A year later he came back from the Reform School greatly improved and went to work.

The next year he went on a visit to Cold Spring on the Hudson, where he was upset from a boat on the river. With two other companions he clung to the boat for a long time until he was rescued. The chill and excitement brought on unconsciousness and fever, with some delirium for a time. From this event he seemed disinclined to work, was restless and irritable in his manner when advised by his mother and others, and spent his time away from home, occasionally working a short time, then idling about saloons. He was eighteen when he formed the acquaintance of the girl who was afterwards his wife. From this time to the homicide, there is much conflicting testimony of Swift's history. He seems to have been forced to marry his wife by her parents, then driven

away from the house. He then became infatuated with a desire to live with her, which was repelled by her parents and herself. This idea continued, and her refusal was the cause of the homicide. He began to drink to great excess at this time, and was intoxicated as often as he could get money to pay for spirits. Dr. O'Flaherty treated him for syphilis without any results, and noted his impulsive, reckless conduct, without motive or purpose, and expressed an opinion that he was not right mentally.

For a period of three years ending in the murder of his wife, Swift led a life of great irregularity; working from time to time, and being discharged for intoxication and incompetence; then spending his time at low saloons playing the piano for spirits. He grew more and more incompetent and was unable to keep any place long. For four months before the murder he drank to great excess, and was discharged as crazy and on the borders of delirium tremens. He spent several nights in the woods drinking with boon companions. During the year before the murder, the drink paroxysms were followed by three distinct suicidal attempts; one a few days before the murder, in which he swallowed laudanum. After these drink paroxysms he suffered from acute headache, for the relief of which medical aid was called. When stupid from intoxication he would strike his head violently against the floor, and show signs of brain pain and distress. Sometimes he came home at night, but always intoxicated. Then he would not be seen for weeks. During the three weeks immediately preceding the crime he was stupidly intoxicated, going from one concert saloon to another, and occasionally coming home at night, and going away early in the morning. On the night before and day of the murder, he was wildly excited from drink and seemed suicidal and on the borders of delirium tremens. The evening of the murder he watched for his wife to pass a certain point in the street where he could see her. From her ante-mortem statement, Swift met her and inquired if she would forgive and live with him; to

this she replied "No." He then said, "You must die!" and shot her fatally. He then ran up an alley and tried to shoot himself, without success, the lock of the revolver failing to work. He was arrested, and later denied all recollection of the event. He reiterated this statement up to death, and claimed he could not realize why he had killed the woman of all others he loved so dearly. Exactly what he did or said before the crime is disputed. The prosecution claimed that Swift bought a pistol and affirmed that he was going to kill hts wife if she did not live with him. The defense showed that he was wild and suicidal, also intensely excited for days before, and acted and talked like an insane man. When arrested, he was suffering from well-marked syphilitic eruptions, and for a long time his mind was like one recovering from alcoholic From this time to the execution he was cool and indifferent, expressed no fear of death, and showed no special interest in the efforts to save him. In jail and at the gallows he manifested a strange unconsciousness of his situation and surroundings, and although his health greatly improved, he remained stolidly indifferent to the last

A summary of the facts would indicate the following: 1st. Swift inherited a degree of mental degeneration and tendency to neurotic disease that would naturally develop from the slightest exciting causes. An alcoholic diathesis was present, and nerve and brain enfeeblement that would find in alcohol a most seductive relief. His ancestral history showed the impossibility of Swift's having a sound mind in a sound body.

2nd. The early and later history of Swift's physical condition and growth showed clearly this degeneration. The nasal hemorrhages, the night sweats, the headaches, were strong additional evidence.

3rd. His sudden lapse into low company at the death of his father, and his subsequent dissolute life, were the natural events in the history of the failure of the higher brain centers to control.

4th. The excessive use of alcohol continuously and at intervals, adding paralysis to the latent degeneration, would inevitably fix disease and disease conditions, incapacitating the brain to act normally; and hence the crime would follow as a natural sequence, depending on chance conditions and surroundings.

Here was a combination of physical conditions, such as inherited tendencies and diathesis, neurotic feebleness, instability with alcoholic and syphilitic degeneration; the brain soil, the conditions, the environment, were all present, and inebriety or more pronounced forms of insanity was the almost certain result. John H. Swift was crippled from birth, freighted down with inherited defects and tendencies, with a feeble, unstable mentality, which under the most favorable circumstances could hardly expect to lead a normal, natural life. Such a brain was incapable of adjusting itself to the environment and the strains incident to life. That he would use alcohol to excess for its effects was a certainty that could have been predicted. That suicide or homicide or other crime would follow was equally certain, governed by special conditions that might occur at any moment. The excessive use of spirits would develop delusions and all forms of morbid impulses, which might materialize into acts at once. Such a life would be a continuous round of disreputable acts, and low, selfish, unnatural conduct.

Medico-legally the question would occur, could anyone with this inheritance and neurotic history use alcohol to excess for years, and be of sound mind or capable of planning and executing any crime? Is it possible for one with this history, who was intoxicated for days before and on the day of the crime, to sanely premeditate and carry out a fixed rational plan of action of any kind? The court and jury in this case supposed this possible. An assumption contradicted by all study and experience.

Swift was an alcoholic maniac, and incapable of sane reasoning and of control of his acts. Hanging such a man was judicial barbarism. Science protests everywhere against the delusion of judging criminals by theories of responsibility that are unsupported by facts. To hang such men is going back in humanity and civilization. It is the revival of barbarism. Society gains nothing, justice and civilization gains nothing, crime is not checked by the punishment of defects and imbeciles as sound and responsible. The superstitition of supposing inebriety to be a moral condition, and the liberty of the victim protected so he can poison himself for years and become insane, then when he commits crime punish him as sane and accountable, is a strange reflection on the intelligence of our times.

I conclude this very general study with a summary of the facts which seem supported by the strongest evidence presented up to this time.

Ist. In all cases of inebriate criminals, there is literally mental defect, and more or less incapacity to reason sanely or control their acts. An inebriate who does criminal acts cannot be of sound mind. No criminal who is an inebriate is sane, and no inebriate is fully sane, and no criminal can be of sound mind long.

2nd. The question for the medical witness to decide is, how far was the prisoner conscious of the nature of his acts? and how far did he have control over his acts, in a certain condition when crime was committed?

3rd. In a case where crime was committed under the influence of alcohol, the law asks what was the prisoner's mental condition at this time? and insists on fixing the boundaries of responsibility and accountability. The law demands that science should go into this penumbra region of sanity and insanity, and point out where vice and disease join, and where human justice should punish and where it should excuse as irresponsible.

4th. The scientific man demands that this question of mental condition at the time of the crime should be studied independent of all theories or legal rulings, seeking the facts and their meaning, with no hesitation as to effects of such conclusions on the court or public. The

scientific man refuses to draw boundary lines of disease and accountability, but insists on minute study and general conclusions based on the probable facts.

5th. If the facts in the history of the prisoner and the crime indicate a degree of unconsciousness of the act or its consequences, also an inability of control of his acts and conduct, the irresponsibility of the prisoner should be assumed as a fact far more likely to be true than his sanity and responsibility.

6th. When the fact of the inebriety of the prisoner is clearly established, his sanity and responsibility in a given case must be proven beyond all question or possible doubt, proven from the circumstances and conditions of the life and crime. The fact of the presence of inebriety reverses the order; his insanity must be assumed and his sanity proven.

7th. Finally, in all these cases the medical witness is called to determine the physiological, pathological and psychological facts and their meaning. The application of these facts must be made by the court, jury and law.

The medical expert and student of to-day must go beyond the theories of yesterday, or the facts on which yesterday's views were based. A newer, larger field opens up to-day, and the facts are more numerous and indicate a clearer, wider view to-morrow.

Remarks on Institutions for the Insane, with Special Reference to the Most Natural and Satisfactory Methods of Serving Food to their Inmates.*

By H. A. BUTTOLPH, M. D., LL. D., Short Hills, N. J.

GENTLEMEN: A wide difference exists as to the form, size, arrangement, construction and management of hospitals and asylums for the insane, by architects and physicians in this and in other countries, who have been engaged in designing and conducting them.

Confining the discussion at this time mainly to the subject proposed, the service of food to the insane, I would say, that, so far as the question relates to the inmates of different institutions, it may be varied to suit the plan and capacity of buildings and the ease of the service, provided that the class or classes and condition of the patients treated are such as not to suggest interference with this liberty. What then is the practical point to consider in this regard, preliminary to the decision of the question?

Primarily, it is a question intimately connected with the classification of patients, and as such, it becomes of great practical importance to their safety, welfare and progress toward recovery, if curable, and to their comfort and contentment if otherwise.

In most of the State institutions of this country and in all of the corporate, mixed classes of patients are received, that is, those supported by friends, and others by the public authorities.

Aside from this distinction among the inmates, the general basis of classification is the state and stage of disease, as it affects the minds and influences the conduct and habits of individual patients.

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While the minds and feelings of some of the insane are directly and very greatly interested and occupied by the character of their associates, surroundings and methods of management, etc., others, from difference in mental constitution, previous habits and associations, as well as the form of mental disorder with which they are affected, pay far less attention to these questions in their bearing on their situation and daily life.

Still other individuals and classes—and this relates to all persons, who from depressing and otherwise modifying influences of diseased brains on the mental state, have no observation nor thought in regard to their situation, readily accept and, without question or feeling, whatever is proposed, and yield to the direction of the current that moves them, as readily and fully as would an inanimate object on the surface of the water. Admitting the importance of attention to the recognized distinctions in the character and condition of insane patients, as above described, it is easy, even for a non-professional person to comprehend the great importance of attending strictly to the principles of correct classification in institutions for their care and treatment.

In applying these principles the statements heretofore made are well established, that in most of the State institutions and in all of the corporate in this country, patients are found who represent the several divisions in social life outside of the institutions; also the various mental states resulting from the influence of disease. I will here add, that, in the institutions of New Jersey, to which I will specially refer for illustration, this state of things largely exists, through the working of the very humane law providing for the treatment of a class termed "indigent" and supported at the public charge, only while residents in asylums. Hence, they are not regarded and should not be treated as paupers. In addition, therefore, to a pretty large percentage of private or paying patients in the State asylums at Trenton and at Morristown, a very large number, indeed, a large proportion of inmates in both institutions, are admitted under the provisions of this law. Many persons of this class are very well connected socially, while many have become insane directly through loss of property and the embarrassments incident to a change of circumstances from affluence to indigence. Belonging to this class are many individuals, who are in a condition of mind to feel their misfortunes and state of dependence most keenly, whether in the acute or chronic stage of their malady, and consequently, to be influenced favorably or otherwise by any and all depressing or disturbing influences connected with their associations and treatment.

To meet this want, extra facilities for classification were provided in both of these buildings; there being in the former arrangements for twelve, and in the latter for eighteen full and twenty partial classes of patients of each sex, besides six suites of rooms for the accommodation of special cases and their attendants.

Among the most important, indeed, essential facilities for carrying out the system perfectly, are dining-rooms for each class, or twenty-four in the former institution, and thirty-six in the latter, for general purposes, and six for the special wards. Ample facilities are also provided for the easy and prompt distribution of food to each of the several departments, through the agency of hand-cars supplied with closed tin vessels, and in conjunction with elevators in each section of the building, passing from the first to the fourth stories as occasion requires.

The general dining-rooms are supplied with steam-heated tables for keeping food warm, also with chinaclosets, tables, chairs, etc. Under this arrangement, the individuals of each class who are associated at other hours of the day, in employment, conversation, reading or amusements, are able to go easily, quietly and quickly to their meals in the wards where they belong, without being disturbed by contact with those of another ward or class, and have the further advantage of service while at the tables by their own attendants, who can give such

adapted care and attention as each may require and also supply such extra diet to individuals, as may have been prescribed by the physician, on account of sickness or other cause. Such are the facilities offered by these institutions in their original construction and that exist at this time, for fully maintaining the classification and comfort of their inmates while at their meals. Judging from ample opportunities for observing the methods of serving food in public institutions abroad, also from a prolonged experience in conducting them in this country, I am satisfied that the system of serving it in ward dining-rooms, in all institutions in which mixed classes of patients are received and treated, is an arrangement as well adapted for the purpose as it is possible to make, especially in institutions of the form, elevation and extent of those named. Of late it has been proposed to substitute in the institution at Morristown, a system of assembly diningrooms in detached pavilions, to be located on the grounds in the rear of the sections of the present building, and nearly associated with the kitchen now in use or with one to be specially provided for the purpose. If this plan is adopted and carried out, patients of both sexes who are strong enough and who are in a suitable condition otherwise, to comply with the arrangement, will be required to do so. The advantages claimed for this method are greater facility and economy in the distribution of food from the kitchen, also for its inspection by an officer, while the patients are at their meals.

That the convenience of one or two persons who have a general oversight of food supplies, would be promoted by this, compared with the method now in use, may be admitted, but what importance should be attached to the mere convenience of such an official, in contrast with the very great *inconvenience* caused to *hundreds* of insane men and women, in going to and from their meals, to rooms so remote, from their lodging and other apartments? That this method, to a small extent, may be economical, might be true, taking one view of the subject, the less

subdivision into parts in sending it from the kitchen. In another aspect, however, which is far more just, the wholesale method of its distribution on the tables, by persons not familiar with the habits of eating of individual patients, might lead to much greater waste than occurs when it is done by attendants in ward dining-rooms, who know the peculiar habits and wants of individual patients and supply them accordingly. Again, if it be the duty of a given officer of the institution, as the warden, to inspect and supervise the quantity and quality of food-also its preparation by the overseer of the cooking departmentcould not such inspection be made far more successfully in the kitchen itself, and with the added advantage of having mistakes corrected by the cook, at that stage of the service? The truth of these suggestions is so obvious as to require only to be stated to be accepted by all who have judgment and practical knowledge of necessary details.

Recurring again to another branch of the subject, it may be stated, that aside from the objections already made and insisted on as connected with the classification of patients by this method of food distribution, another and more obvious ground of complaint and criticism, would be the greatly increased difficulty and danger to many of the less strong and partially demented patients, in going to and from their meals three times a day, from all parts of a four-story building nearly 1400 feet long in a direct line, to outside dining rooms, located, as before stated, only or mainly with reference to convenience in serving food from the kitchen. Verily, this would be bringing the "mountain to Mahomet," in good earnest.

If it be asked how the patients from the several wards and stories of the building are to reach dining-rooms thus situated, it may be answered that after descending to the ground-floor of each of the twelve sections of the building in which patients are situated, the distance would be made over open or covered walks, if so prepared, through the grounds; or by a method less exposing

to health, but infinitely more confusing to the minds of the insane, making the passage by going forward from the extremities of each remote section, from which patients are taken, in a zig-zag manner, through main and connecting corridors, to the point or points of connection of the building with the outside structures. This mode of being drawn or driven to and fro, of course involves the intermingling of diverse classes of patients on the line of movement both ways, and would be an apt illustration of "Bedlam broke loose," six times a day.

There would be brought in contact with patients of the most intelligent, orderly and convalescent classes on the way to and from the dining-rooms and while at their meals, such of the excitable, irregular, feeble, untidy, demented or epileptic classes that might be selected, having in view the greatest possible number for the purpose of demonstrating the utility and economy of this method. When it is stated that one of the declared objects in making such arrangements is to vacate as large a number of the ward dining-rooms as possible (to increase the lodging capacity of the house by filling them with beds), the tendency would be often to include patients of doubtful character or condition for the exposure and effort required. Aside from this, however, so many of the old, feeble and demented cases would of necessity, still take their meals in the ward dining-rooms as before, that a large reduction would have to be made in the estimate of space thus gained for lodging purposes.

Unfortunately, however, the house would very soon be overcrowded, by adopting such policy, and its best hygienic condition greatly impaired thereby.

While it may be quite true, that reasons exist for early action by the State authorities, for providing increased accommodation for the insane, such method for doing it would only prove of a temporary and questionable character.

The original plan of the asylum at Morristown was for 600 patients, which at the time it was made, in

1868-9—by Samuel Sloan, architect, of Philadelphia, and myself—was considered as many as could be properly associated in one building, intended to receive mixed classes of patients. During the progress of the work of construction, however, the commissioners, architect and builders having it in charge, decided to make such changes in the original plan of building as would make it practicable to finish and use the attic as a fourth story, thus increasing its available capacity to 800 patients and their attendants.

It may be added that this being the limit to the estimated number to be received into the building as finished, it would appear to be the part of wisdom for the State to meet its just obligations to the increasing number of the insane, by the erection of other buildings suited to the purpose, rather than by a temporary and cheap makeshift of this kind. Since 1868, whether wisely or not, it has come to be the policy or frequent practice, as is well known, to extend this class of buildings almost indefinitely.

This perhaps, has seemed in a degree, justified by precedents derived from the large capacity of many institutions abroad, but particularly of the county asylums of England, forgetting or *ignoring* the fact, that the latter are devoted exclusively to the admission and care of *pauper* patients, a large number or proportion of whom are in states of chronic dementia.

For the safe and comfortable care of such patients little attention is called for in regard to classification, because they do not require it on the ground of mental and social distinctions, but only or mainly in regard to details relating to the bodily comfort and welfare of their inmates. Hence, they are planned and finished with large or very large associated dormitories for lodging patients and still larger apartments for dining, or perhaps more properly, for feeding several hundred together, on the congregate or assembly system. The patients thus being all of one class, socially considered, and substantially so

in regard to the form and stage of their mental disorder, the consideration that calls for attention in providing for them is only in regard to convenience and economy in the design and construction of buildings, for the easy management of details relating to their physical wants.

In the treatment of patients of this description in the county asylums of England, a large number may be trained to engage in simple employments that may be dictated to them-picking oakum, etc.; and from their quiet, harmless mental state, the question of control, without the use of mechanical restraint, is almost wholly eliminated from the problem. Hence, it is perceived that in providing model buildings for the insane and for the easy management of details, the primary thought, as before stated, must relate to the character of the former-as to means for classification and their adaptation to the condition of the latter for requiring it. With mixed classes of the insane as described, this necessity must be provided for, and kept in view, "first, last and all the time." All attempts to deny its importance or to evade the just obligation of the State for its accomplishment, is but a farce and fraud practiced upon the insane, by the officers whose duty it is to settle and carry out the correct policy in this respect.

To avoid a misunderstanding of the question, it may be stated at this point, that it is feasible to adopt the English county asylum system of assemby dining-rooms in this country with propriety, perhaps with advantage, in certain circumstances and places.

Ist. In the institutions for pauper patients in large cities, as New York, Philadelphia, etc.

2nd. In State institutions built largely on the cottage or village plan, as at Kankakee, Ill., which allows or provides for the separation of pauper and demented cases from others, in many detached structures on the grounds, but associates them with a central administrative building, having wards and ward dining-rooms connected therewith for mixed classes of patients. In this institution large

congregate dining-rooms are located centrally in respect to the detached cottages and as nearly as practicable to the cooking departments that supply them with food.

While the first condition for using this class of diningrooms for large numbers is met-that is, that the patients belong substantially to the same classes socially and in regard to their state of mental disorder-yet questions of principle and expediency arise as to whether the exposure of the patients in going long distances unprotected by enclosed walks to and from their meals in cold and stormy weather; also as to the influence of low temperature on the food served from the kitchen through the open air to the dining-rooms; and last, though not least, and perhaps worst of all, as it regards this plan of building, whether an institution with so many detached structures, with inmates so remotely situated from the main administration building, and from each other, it does not become a physical as well as a moral impossibility for the chief medical officer to give adequate inspection and effective personal influence and control over it in many imporant particulars.

These several points or peculiarities of this method of building State institutions are deserving of the most careful consideration before its design and capacity are approved and copied by the authorities of other States.

3rd. The next example of State institutions to which the principle of assembly dining-rooms may be applied with propriety, is the Willard Asylum and like structures for chronic and supposed incurable cases.

4th. The system may also be used in a modified form in the several "annex" structures for *chronic* and *demented* cases, built as extensions to State institutions receiving mixed classes of patients, as Middletown, Conn.; the Central Hospital for Insane at Jacksonville, Ill.; at Trenton, N. J., etc.

5th. Lastly, it may be stated that the system is in successful operation at the Institution for the Eastern Counties of Pennsylvania, located at Norristown.

This is one of the largest of the State establishments,

having about 1,700 patients of both sexes, made up, to a great extent, of pauper patients from the city of Philadelphia and the almshouses of counties within the district. While the design of this structure (being quadrangular, or in compact block form, two stories high,) is eminently suited for the care of patients nearly resembling in character and number those of the large English county asylums for pauper patients, yet it can in no sense be regarded as a proper model to copy in design or management, particularly as it regards the service of food, in very large congregate dining-rooms—by State institutions intended for mixed classes of patients, being built in extended linear form, and four stories high, as that at Morristown.

Note.—As an interesting and instructive commentary on what has, of late, been said and written of the practical working of this assembly dining-room system, I take the liberty of herewith presenting a copy of remarks made to the authorities of the Essex County Asylum in this State, in which *mixed* classes of patients are received to a considerable extent, by Dr. L. S. Hinckley, Medical Superintendent.

Dr. Hinckley's views were given on this subject among others, on the occasion of an official meeting of the members of his board, connected with the near completion of a large extension of the building, and were reported as follows, in the *Newark Daily Advertiser*, of May 7, 1889:

Dr. Hinckley continued: "The congregate dining-room system 1 do not advocate, except in institutions which from the original design offer less convenience than our own for the establishment of at least the semblance of home comfort at the table. A trial of the congregate dining-room for a period of over four years has presented to my mind sufficient facts for conviction, which have been materially strengthened by visits to institutions where much larger dining-rooms than our own existed. Let the exclusive right to maintain that the congregate dining-room plan is an advantage from all points of consideration be identified with asylums built on the cottage or village plan, but in the compact building there is no advantage or relief to the management, so far as proper supervision or distribution is concerned, and there is a decided miscar-

riage of good intentions to our patients. We provide for four sub-diningrooms at present, and opportunities for comparison have not been lost.
The inspection of the food when served or in the act of serving occupies
but a few minutes in all the dining-rooms. The question of economy
balances in favor of the smaller rooms, and the meals are served warmer
and in better form in the sub-rooms than in the larger. The forming
into line for a trip to the associate dining-room three times a day is one
of the features of discomfort to our unfortunate charges that I am
pleased to aver has been obviated in the construction of the new wing."

SPINAL CONCUSSION.

By S. V. CLEVENGER, M. D., Chicago, Illinois.

SPINAL concussion is often the subject of controversy in law courts, and the railway companies of Europe and America annually pay millions of dollars in the settlement of claims wherein this disorder is justly or unjustly alleged.

Corporations are liable to be victimized by malingerers and individuals lose their damage suits through want of correct knowledge on the part of physicians and attorneys as to what constitutes spinal concussion.

If we consider law as a science intended to minimize the confusion that arises in the settlement of disputes, justice can be furthered by whatever enlightens as to matters of fact and simplifies hitherto abstruse matters. And it is, cæteris paribus, usually in proportion to the correctness of medical information in medico-legal cases that just decisions can be reached by judge and jury.

There are many causes for our imperfect knowledge of a great number of bodily ailments, of which spinal concussion is but one, which circumstances singled out from obscure disorders and made conspicuous as an opprobrium medicorum. Medicine has many triumphs to record, especially in the last quarter century, as regards the more generally recognized diseases; nor can we tell how far our better knowledge of these may assist clearer conceptions of less frequently occurring ailments until we

NOTE.—In the preparation of a paper for the last meeting of the American Medical Association, at Newport, R. I., the accumulation of notes, made during many years, on the subject of spinal concussion, could not be condensed or even fairly treated within the limits of an ordinary article, and before I was aware of it a book was growing under my pen.

This article constitutes the criticisms of Erichsen and Page in the introductory chapters of the work now being published (simultaneously with this journal issue), by F. A. Davis, Medical Book Publisher, Philadelphia, from whose house appear so many creditable medical works, such as "Sajous' Annual," etc.

have taken account of what we have learned and what we can make available for extended research.

Notwithstanding the observations of Leewenhoek with his imperfect microscope in 1687, and Prochaska's announcement in 1779, of the brain structure, the ancient idea that the "spinal marrow" was similar to the marrow in the hollows of long bones, fatty and structureless, was as rife among the medical men in the early part of this century as it is among the uninstructed people of to-day.

Erichsen instituted an epoch in spinal concussion study, from 1868 to 1875, at a time when the minute anatomy of the spinal cord had begun to be better noted. In fact, the greater part of an exact nature concerning this most important organ, the spinal cord, has been accumulated mainly in the last half of the present century by such writers as Longet, 1847, and, later, Stilling, Kölliker, van der Kolk, Deiters, Schultze, Gerlach and many others.

Because of this want of knowledge of the time, when P. Frank, in 1792, Harless, in 1814, Kloss, in 1820, and Ollivier, in 1821, investigated the subject of inflammation of the cord, insuperable difficulties were in the way, and it was as late as 1864 before Fromann cleared up the pathological anatomy of cord inflammations.

Clinicians had with more or less accuracy separated out many groups of symptoms pertaining to spinal injuries previous to this, among the ablest being Sir Astley Cooper and Abercrombie, in the early part of this century, but the genius and indefatigability of these workers had mainly to do with gross appearances in relating cause and effect.

Leyden, * in 1875, made important contributions to the literature of spinal concussion in his work on spinal diseases, and very little had been accomplished by writers other than Leyden and Erichsen in this field during the past twenty years, medical encyclopedias, surgeries and neurological works, containing discussions of Erichsen's

^{*} E Leyden, Klinik. der Rueckenmarks-Krankheiten, Band II, Berlin, 1875.

writings, and, in one instance, an English railway surgeon, Herbert Page, published a book especially directed against Erichsen's views on this subject.

With the utmost uniformity Erichsen has been quoted and copied by contemporaneous and later writers upon surgery with scarcely a criticism. The undoubted value of his writings on general surgery paved the way for a ready acceptance of his work on concussion by writers of surgical works, such as Gross, Holmes, Agnew, and neurological authors, as Erb, Ross, Gowers, etc.

In the progress of Medicine valuable books have been superseded by writings more in keeping with recent knowledge; but we should bear in mind that Rokitansky, Graves, Abercrombie, Trousseau, and even far earlier writers, afforded much solid material upon which we yet depend. The errors of such standard authors are due largely to the times in which they lived not affording them sufficient collateral information. But we cannot dispense with what they established as true. The bulk of Erichsen's work will continue to be standard, even though viewed in the light afforded by Westphal, Oppenheim, and other investigators.

Blackstone is none the less valued by lawyers because his work is antiquated. Neurologists, surgeons and attorneys find so much useful information in Erichsen's book that lawsuits, wherein spinal concussion is an issue, are seldom undertaken without reference to this London surgeon's lectures. Advanced knowledge of the physiology and microscopic anatomy of the spinal cord and the diseases to which it is subject, require, however, much consideration in connection with Erichsen's cases and the inferences he has drawn from them and those reported by his predecessors in surgery.

In these chapters no attempt will be made to supplant Erichsen or any other author who has so honestly dealt with the disease; only for the purpose of arriving at a clearer understanding of what spinal concussion is or is not, an abstract of his work and critical review of his

cases is attempted, the references being to his 1875 revised edition.

He opens by quoting Hippocrates, that no injury to the head is too trifling to be despised, and suggests that this observation may be applied with equal if not with greater justice to injuries of the spine.

These injuries occur in the ordinary accidents of life, but in none more frequently or severely than in railroad collisions, a special and painful interest attaching to them from the distressing character of the symptoms presented by the sufferers. Moreover, in these cases there is always a peculiar difficulty, which is often greatly increased by the absence of evidence of outward and direct physical injury, by the obscurity and insidious character of the early symptoms, the slowly progressive development of the secondary organic lesions, and the functional derangement entailed by them, and by the very uncertain nature of the ultimate issues of the case, taxing the diagnostic skill of the surgeon to the very utmost; and there is no class of cases in which more discrepancy of surgical opinion may be elicited.

While "shocks" to the nervous system arising from railway accidents do not stand in a different category from accidents occurring from other causes in civil life, the rapidity of the movement, the momentum of the persons injured and of the vehicle, the suddenness of arrest, the helplessness of the sufferers, their natural mental perturbation, render railway injuries peculiar and the cause special.

The thrill or jar, the "ebranlement," the sharp vibration transmitted through everything subjected to it, is compared to an electric shock, to setting the teeth on edge, that causes the carriage to be shattered into splinters, and sends a sharp tremulous movement through every fiber of its occupants. In addition the traveler is thrown to and fro without any power of resistance.

In the writings of Sir Astley Cooper, Boyer, Sir Charles Bell and later, Ollivier and Abercrombie, are many

isolated cases of concussed spines, but since the introduction of railways these injuries have become proportionally more numerous and more severe. Erichsen refers to seventy-five cases of "contusions and miscellaneous injuries of the spine," recorded in the U. S. Army Surgical Reports of the civil war. Even though "all cases of fracture and dislocation are excluded," the citation can be but of general application to the whole subject of spinal injury, as the exigencies of war made hospital case reports very incomplete, and there was extant, during that time, very imperfect means of diagnosis of spinal ailments. We simply learn from this that seventy-five undiagnosed spinal injuries without apparent dislocation or fracture were noted, as follows:

Discharged as disabled, - - - - 27.
Returned to easy duty, - - - 3.
Returned to military duty, - - - 43.
Died from causes unconnected with accident, - 2.

Eleven of the cases were under treatment for periods from one month to fourteen months.

At this particular point we arrive at one of the causes of the confusion with which this subject is surrounded. Here are cases grouped in such a manner as to give the erroneous impression that they are what are known as typical instances of spinal concussion, when they are nothing more than mere mentions of disablements, probably spinal, following upon more or less direct blows to the spine. There is nothing to indicate that a single case exhibited the characteristic symptoms of concussion, which must exclude ruptures of vessels, compression, inflammation, etc. That there was a spinal injury of some kind in every case need not be denied, and each injury may have been, and probably was caused by a concussion of, or a blow upon the spine; that expression merely describes the manner in which the accident was received, and the unfortunate fact that concussion of the spine has both a general and restricted meaning, has befogged every discussion.

This ambiguity in Erichsen was doubtless not intentional, but that it led to confusion is undeniable.

Lawyers and physicians who are called upon to look upthe subject for the first time cannot but be puzzled by the loose way in which the changes are rung upon the simple term concussion of the spine, as a cause and as an effect, as generic and specific, as etiological and symptomatic.

In all likelihood cases of pure uncomplicated disease known as spinal concussion are rare, as meningitis, myelitis or dislocations may accompany this disorder to a greater or less extent, but we can search in vain the Count de Lordat case, cited from Maty's 1766 report for other than most superficial resemblances to "typical concussion of the spine." It would seem that Erichsen, from some cause or other, had confounded the disease with the mere name of the manner of injury receipt. The "twist of the neck" resulted in a slowly supervening severe cervical and bulbar meningitis and sclerosis, shown post-mortem.

Had Maty's report been a little more complete, the march of destruction of tracts and other tissues could now be described.

Erichsen properly objects to the substitution of concussion of the cord for concussion of the spine, to parallel concussion of the brain, as he claims that the spine is a much more complicated structure than the head. In concussion of the spine we have not only, and not even necessarily an injury to the bony, fibrous, ligamentous and muscular structures that enter so largely into the conformation and support of the vertebral column, of the nerves that pass across it, and of the membranes included in it. Injuries of these parts often occasion very grave and most persistent symptoms without any lesion whatever of the cord. He touches here upon suggestions that, with the advance of neuro-pathology, may reveal the irritative phenomena to be due to adjacent extra-myelonal lesions. He approximately defines concussion of the spine as a certain state of the spinal cord, occasioned by external violence; a state that is independent of, and

usually, but not necessarily, uncomplicated by any obvious lesion of the vertebral column, such as its fracture or dislocation, a condition that is supposed to depend upon a shake or jar received by the cord, in consequence of which its intimate organic structure may be more or less deranged, and by which its functions are certainly greatly disturbed, so that various symptoms indicative of loss or modification of innervation are immediately or remotely induced.

The primary effects of these concussions or commotions of the spinal cord are probably due to molecular changes in its structure. (Italicized here to emphasize a statement of Erichsen which unjust criticisms of his pathology ignore.) The secondary changes are mostly of an inflammatory character, or are dependent on retrogressive organic destructions such as softening, etc., consequent on interference with nutrition.

It thus becomes evident that Erichsen includes in spinal concussion what we now know to be inflammations of the cord and membranes, slowly induced, as secondary to blows, jars, etc.

His views were more those of a surgeon than of a neurologist. The former is often nonplussed by the absence of obvious lesions, while the latter is more apt to differentiate symptoms into many distinct groups, which, at the time Erichsen wrote, surgeons were content to denominate as spinal injury. The blow to the back, followed by a diseased nervous system, sufficed to establish as concussion of the spine what we now separate into myelitis, meningitis, sclerosis, extravasations and spinal concussions.

Indeed Erichsen tacitly admits this in stating that four distinct forms have been included in the term concussion of the spine. I. A functional disorder. 2. Compression of the cord from extravasation. 3. Compression of the cord by inflammatory exudations. 4. Nutritive cord alterations. The absence of obvious external injury of the spine, such as laceration or compression of the cord, by the fracture or dislocation of a vertebra, constituting the

bond of union between these different "kinds of concussion."

Among other severe direct injuries to the spine he mentions cases that terminated in caries, angular curvature, abscess, and a case where a slap in the back, to cause a new-born infant to breathe, developed dorsal caries.

I think we can fairly understand Erichsen as including in spinal concussion any violent injury to the cord functions without there being demonstrable evidence of such injury in the region of the bony and ligamentous spinal column.

In Lecture II., under the heading "Severe Direct Injury to the Spine—Concussion," Erichsen details thirteen cases, in all of which lesions of the cord plainly existed primarily from the symptoms, such as paralysis and sensory impairment.

Lecture III. describes the symptoms of severe concussions of the spine from direct violence. These symptoms necessarily vary greatly, according to the part struck. It is quite possible to suppose that a direct blow to the cervical spine may cause instant death without dislocation or fracture to the column. But a fracture or partial dislocation may exist unsuspected and fatal results follow later.

Case 14 is one of unsuspected dislocation between the second and third vertebræ, with sudden death on the fourth day.

Case 15 describes an unsuspected fracture of the spinous process of the fifth cervical vertebra, with death from compression of the cord a few days later.

Case 16. Injury of spine in lower dorsal region and recovery, with angular curvature, a few months afterward.

He deduces from these cases that, notwithstanding the infliction of an injury of a fatal character, life may be prolonged several days, until death is brought about by an accidental movement. An unnumbered case, following the description of Case 15, mentions a man who fell on top of his head without fracturing the skull, injuring the cervical cord, showing that fatal spinal injury may be occasioned indirectly.

Lecture V. deals with a class of cases in which the back injury is either very slight, or where the blow has fallen on some other part of the body than the spine.

Case 17 is not fully reported. "Suffered the usual symptoms of spinal concussion," and has not been able to ride since falling from his horse.

Case 18 is one of chronic meningitis of cord and base of brain, with imperfect recovery after seven years

Case 19. Chronic meningitis and imperfect recovery.

Case 20. Chronic cerebro-spinal meningitis. Incurable.

Case 21. Injury of spine in infancy. Incurable.

Lecture V. discusses concussion of the spine from general shock.

Case 22. Meningeal extravasation. Recovery.

Case 23. The slow supervention of symptoms and improvement after three months leaves the question between organic and functional derangement undecided.

Case 24. The spinal symptoms imperfectly described. The subsequent cerebral symptoms due to head injury.

Case 25. Meningeal lesion.

Case 26. Meningeal lesion and subsequent myelitis.

Case 27. Meningeal irritation and small multiple cord lesions.

Case 28. Better recorded than preceding cases. Organic cord changes were not evident until late in the disease, but the usual spinal and cerebral symptoms of concussion prevailed.

Case 29. Severe and somewhat typical concussion symptoms with cerebral complications.

Case 30. Concussion symptoms; probable myelitis later.

Case 31. Meningitis and myelitis preceded by "usual symptoms of spinal concussion."

Lecture VI. treats of sprains, twists and wrenches of the spine.

Case 32. Vertebral displacement without cord implication, from strain.

Case 33. Spinal caries, paralysis and death, from a wrench.

Case 34. Strain of cervical spine, with paralysis of arm only.

Case 35. Fall on head, twist of cervical spine, body paralyzed. Recovery.

Case 36. Spinal twist, paraplegia.

Case 37. Spinal wrench in a railway accident. Paraplegia.

Case 38. Cervical spine wrench, paralysis. Recovery.

Case 39. Spinal wrench. Menigo-myelitis.

Case 40. Back strain. Some of the symptoms similar to those of concussion cases.

Case 41. Back strain, similar to Case 40.

Case 42. Lumbar strain. Lumbago and other symptoms unlike those of concussion.

Under "Complications of Concussion" in Lecture IX., we have:

Case 43. Syphilitic symptoms, none of concussion.

Case 44. Medulla concussion.

Case 45. Intestinal implications most prominent, spinal symptoms less so.

Case 46. Intestinal and vesical hemorrhage, after fall on back.

Case 47. General shock, mainly abdominal and cerebral.

Case 48. Cerebral and spinal injury.

Case 49. Blow to cervical spine, bladder trouble.

The concluding cases, 50 to 53, have nothing to do with the main issue.

Regrouping Erichsen's cases, we find that those numbered 17 to 24 are imperfectly reported; 23 is problematical; 14, 15, 16, were unsuspected fractures and dislocations.

The 75 army cases, the Count de Lordat case and I to I3, I9 to 22, 25 to 27, were various kinds of cord derangements, such as myelitis, meningitis, extravasations, etc., primarily or secondarily resulting from external violence, without demonstrated bone or ligament lesion. In many of these, however, there are symptoms that do not necessarily pertain to the organic diseases that were demonstrated post-mortem, and these symptoms may be accounted for by comparing them with those occurring in the "purer" concussion cases, from which organic lesions may be excluded.

This, probably functional disorder, is best described in Cases 28, 29, 30, 31, which include the most typical instances Erichsen has recorded. Many of the symptoms E. mentions in the body of his book he appears to have derived from the statements of other authors. Separating out the conditions that he notes in his own cases, he records individual instances of leg incoördination, fever after accident, deafness in right ear, no vision disorder, photophobia, general paræsthesia, back paræsthesia in left arm, right leg, left leg, motility impaired in right side, left more than right side; arms, legs and body without sensation impairment; anæsthesias in left arm, both arms, right arm, general numbness, numbness in both hands, irritability, general sensory disturbance only, no sexual loss; sleep good, suicidal, bedridden, epileptoid fits, general decreased size, decreased size of left leg, both legs, increased size, weakness and exhaustion, vomiting later, digestion good, appetite bad, hemiplegia, arm paralysis, no pain in head or spine, cramps and twichings in legs, in both arms, dragged and everted left foot, hyperalgesia.

Next most frequent findings are the following symptoms, each separate ailment occurring in two cases: hyperæsthesia in right arm, both legs, motility impairment in left arm, motility not impaired, straddling gait, anæsthesia of body and legs, nervousness, vertigo, bowels regular, constipation, no emaciation, bad digestion, complete paraplegia with anæsthesia, pain in head.

In three cases for each symptom are recorded bad dreams, depression, loss of sphincter ani control, emaciation, decreased weight, difficulty in walking up and down stairs, impaired hearing, hyperæsthesia of all senses, motility impaired in both legs, in right arm, numbness of right side, of left leg, no urinary difficulty.

In four cases for each symptom there were partial paraplegia, aural hyperæsthesia, motility impaired in left leg, sphincter vesical difficulty, sexual loss.

In five cases for each symptom there were subnormal temperature, tinnitus aurium, motility loss complete in arms and legs, numbness in both legs, urinary difficulties.

In six cases tactile hyperæsthesia was noted.

In seven cases there was vision impairment.

In nine the sleep was bad.

In eleven the backs were weak, and the same number were disabled immediately after the accident, and memory impairment also occurred in eleven cases.

Twelve cases complained of spinal tenderness.

In fourteen cases the disabilities appeared at shorter or longer periods after the accidents.

In sixteen cases consciousness during or after the accidents was not disturbed.

Twenty-one cases suffered from pain in the back, fourteen of these more particularly upon moving.

The results are noted, as follows:

Single cases recovered in six weeks, six months, seven months, fourteen months, twenty-one months.

One had improved in three months.

One made an incomplete recovery.

Three had intermissions.

Single cases had not recovered in two-and-a-half years, four-and-a-half years, five years, seven years, eight years, nine years, sixteen years, twenty-six years.

One case died in ten days after the accident, another in five years and a third eleven years afterward.

Herbert W. Page* states (p. 1.), that "of all accidents

^{* &}quot;Injuries of the Spine and Spinal Cord." Second edition, 1885.

to which man is liable, none more serious can befall him than injury to the spinal cord," and then he devotes 377 pages to discussing the improbability of such an injury through railway accidents.

He alludes to Sir B. Brodie's* divisions of injuries of the spinal cord, which may be condensed as follows:

- I. Bone injuries, causing indirect spinal cord diseases.
- 2. Vascular injuries of the cord.
- 3. Injuries of the cord substance, whether demonstrable or not.

Page's criticism of Brodie, Abercrombie, Erichsen and others are in the main directed to show the absence of omniscience of those writers. His method throughout is to suggest the probability of the conditions numbered as above, one or two, existing where number three is alleged, or vice versa: and where the patient survived, he calls attention to the absence of post-mortem verification of the conjectured pathology; and when lesions were demonstrated, that they were insufficient to cause the symptoms, or if sufficient and secondary, or sequential, that they might have been primary.

Thus, on page 8, Page says that Brodie "does not record one single case of supposed concussion of the spinal cord which ended fatally, and where there was not also serious injury to the spinal column," and cites a case of unsuspected vertebral fracture to disprove "disorganization and dissolution of the cord being produced by concussion, pure and simple, without some serious mechanical injury being inflicted upon the spinal column as well."

Aside from the fact that Brodie, Abercrombie and Erichsen included among concussed spines cases of cord injuries, with or without visible bony lesions, where a fatal ending showed spinal column injury, it does not follow that the bone and cord lesions were associated. It is well to note the *findings*, but it should also be remembered that grave destruction of vertebræ from injury

^{*} Medico-Chirurgical Transactions, Vol. XX., page 120.

and disease has occurred without interference with the functions of the cord.

The small space allotted by Abercrombie to "Concussion of the Spinal Cord"* has more historical than disquisitional value, and the case he cites is not typical, as the cause concussion was used instead of the recent symptom-group known as such. We would not hold Galen to account for some defect in bacteriology.

H. Mayo's case † (J. J.), criticised by Page, page 12. as probable syphilis or embolism, was an undoubted fall to begin with, followed by meningeal irritation, and reminds me of a case of hemiplegia and traumatic insanity, caused by a rock falling four stories upon a man's head, and the suggestion of a Western medical college professor that syphilis and bromism might produce the same symptoms.

Quoting (page 12) from Boyert three cases of death from spinal hurts, in the first of which there were postmortem findings of injury in the cord, and in the other two none, he states that "We must remember however, that the methods of post-morten examination were then far different from what they are now. With such meager histories as are here recorded we shall not, it seems to us, be hypercritical in refusing to accept these oftenquoted cases as evidence that the spinal marrow may suffer lesion from the concussion, pure and simple, of a blow."

When ancient post-mortems revealed lesions either of bones, vessels or cord, Page accepted them as sufficient to cause the symptoms, when he wished to disprove injury without demonstrable lesion, but when no lesions are found, whether by ancients or moderns, he repudiates the sufficiency of the autopsy, nor is he at a loss for reasons for so doing.

In Bover's first case:

"A l'ouverture du cadavre, nous trouvâmes un épanche-

^{* &}quot;Diseases of the Brain and Spinal Cord," page 572. † "Outlines of Human Pathology," 1833. ‡ "Maladies Chirurgicales." Fifth edition, Tome 3, page 133.

ment de sérosité sanguinolente qui remplissait le canal de la dure-mère, depuis sa partie inférieure jusqu' au milieu du dos, et qui comprimait la moelle épinière."

While this particular case affords evident enough cause of death, where is it in the next case, when:

"Nous ne trouvons ni fracture, ni lésion de la moelle épinière ou de ses envelloppes, ni épanchment"?

Or in the third, when:
"L' examen de son cadavre fit voir les parties dans leur état naturel comme dans le cas précédent"?

Turning Page's reasoning against him, it can be denied that any of the post-mortems revealed sufficient cause of all the symptoms or the death, and that when he assumes compression, contusion or extravasation as best accounting for the symptoms where the parties did not die, he does not realize that his eighteenth century pathology is as faulty and presumptuous as is that of the surgical patriarchs he derides.

He suggests that it may be claimed (page 14) that concussion of the spine, like that of the skull, may annihilate the cord functions, as the latter does the brain functions, in which case a crush of the cord should cause death before paralysis. He loses sight of the fact that paralysis is practically death of that part of the body over which the cord presides and that its functions may be suspended by blows. Reinstitution of cerebral and cord functions may subsequently occur or not, as circumstances determine, and death may or may not supervene from associated causes or their absence.

Syme* is noted (page 14) as "more strictly in accordance with clinical and pathological experience," in stating that "the spinal cord is liable to concussion from blows and falls, particularly the latter, the symptoms of which are similar to those of concussion of the brain, inasmuch as they denote suspension of the function usually exercised by this part of the nervous system." The very consideration Page had just ignored, but now finds convenient because

^{· &}quot;Principles of Surgery." Third edition, page 433.

Syme accounts for it as probably caused by effusion of serum or blood, "which subsequently undergoing absorption, allows the usual actions to be restored." An asumption about as necessary as that when a clock or watch is stopped by a fall, some wheels must be broken or bent whether its time-keeping functions are recovered or not.

Two instances are next taken (p. 16) from Lidell,* and Page says: "The second man, in our judgment, died because his cord was crushed; the first man lived because his cord had escaped direct injury." The first man was paraplegic (here then he must admit functional paraplegia from a blow, for there was no "direct injury,") and Page does not know whether he fully recovered or not, or that he did not die from supervening disease.

Lidell writes that "not infrequently a paralysis, more or less complete, especially of the lower extremities, is produced by injury to the spine without the occurrence of fracture, or, indeed, of any perceptible lesion of the spinal column or of the spinal marrow. The term concussion of the spinal cord has been employed to designate these cases because of the analogy they are supposed to bear to concussion of the brain. In both alike a more or less complete arrest of special function is produced, without any visible injury to the nerve tissue. Cerebral concussion produces a state of more or less profound unconsciousness and spinal concussion occasions a more or less complete paralysis of the parts supplied with spinal nerves, the filaments of which either pass through or are given off from the concussed tract."

These words may clearly be made to include interference, transient, or persistent, with the brain or cord functions.

Lidell's case of paraplegia, Page thinks, might have been occasioned by a tearing through of the nerves to the lower limbs, as it is only stated that no spinal column appearances were found sufficent to account for the persistent paraplegia. It is fair to presume that

^{*} American Journal of Medical Sciences, October, 1864.

adjacent or extra-spinal lesions would be looked for in just such cases; certainly Page would have made such search, and it is not fair to suppose that such existed because they were not particularly mentioned. The very absence of spinal lesions with such a history would lead any educated surgeon to search elsewhere for causes.

"An ecchymosis of the brain and cord is referred to by surgical authors as affecting those organs," says Lidell, pointing to a general contusion superadded to the concussion, but he says, and Page (p. 19) agrees with him, "contusion is much more apt to happen to the brain than to the cord, because, in the first place the surface of the brain is in close relation with its firm, unyielding osseous case, while the spinal cord is separated from its osseous envelope by a considerable space, occupied by the cerebro-spinal fluid, and because, in the second place, the brain is a more vascular organ than the spinal cord, or, in other words, the brain is much more abundantly supplied with blood-vessels, liable to be ruptured by any contusing force than the spinal cord."

That the vascularity of the brain and cord differs, either absolutely or relatively, in such manner as to render the former more liable to blood-vessel injury, is open to discussion, and, while the nearness of the brain to the thinner skull, as compared with the cerebro-spinal fluid separation of the cord from the thicker vertebræ, apparently renders the cord less liable to contusion influences, we can refer to the often-cited cases of Page, wherein the vertebral dislocations have contused and compressed the cord, and ask if the liability of these bone segments to slip one upon another, is not a disadvantage to which the skull bones are not subjected?

This passage in Page is often construed to mean that the spinal cord is better protected from *concussion* than the brain, by reason of the thicker vertebræ and water-surrounded cord, while the skull is thinner and nearer the brain.

Both the brain and spinal cord may be likened, in fragility and liability to injury, to eggs enclosed in boxes of differing thicknesses. It will matter little to the eggs, when dropped, whether they were enclosed in a pasteboard box or in an iron safe.

The propulsion of the spinal fluids from the part struck to a distant part of the cord, may cause conditions comparable to the *contre coup* bursting of ventricular fluids into brain parts remote from the point struck, as was admirably demonstrated by Duret.*

He also, with Rush,† notes the slowness with which cerebral injuries often manifest themselves, making another strong comparison with the peculiarities of cord injuries.

Page thinks (p. 22) that the word "'concussion' should be used to indicate rather the manner of the injury than the result of the injury inflicted by the blow," and thus he acknowledges that the term has been used in the two different senses.

A careful examination of his book will show that he makes two forms fight one another: If a surgeon uses the word "concussion" in the sense of a cause, and does not explicitly say so, then Page shows that the functional symptom-group known as concussion is wanting, hence it cannot be concussion. Next, if these symptoms are fully present, and he cannot blame them upon organic mischief, he attacks the justice of the designation "concusison," on the ground of the manner of the receipt of the injury, all the more readily, as two cases are seldom hurt in exactly the same way.

The older writers used the term ambiguously, and not at all as Erichsen did, though he was looser in its application than are later writers, who apply it only to a certain symptom-group.

Edmunds,‡ cited by Page (page 22) misapplied the term for myelitis following upon paralysis produced by

^{* &}quot; Etudes exp. et clin. sur les Trau. Cerebraux," p. 137.

^{† &}quot;Medical Inquiries and Observations," p. 28. ‡ Brain, April, 1884. "Concussion and Inflammation of Spinal Cord from Gunshot Wound of Back."

the concussion of a shot in the spine, which did not injure the cord membranes or vertebræ.

Jonathan Hutchinson* defines concussion of the brain as "a shake of the cranial contents without any structural lesions of importance." His meaning should be taken rather than his words, for what is meant by "importance" is not explained, and a lesion may be demonstrable or not, and still the case may be a true concussion.

The case of Hewitt (page 26), where recovery from a cerebral concussion, wherein there was no visible skull injury occurred, and he was "as clear in intellect as before," and twenty years after, extensive destruction of the anterior lobes of the brain was found in autopsy, suggests that there are many erroneous ways of considering people "clear in intellect," for as Kiernan† pointed out, frequently surgeons have dismissed cerebral concussion cases from hospital or private practice as "cured," and later in life insane asylums received them.

The "American Crowbar Case" is often referred to as an instance of extensive frontal lobe destruction, without insanity, when the facts were, as attested by Mr. L. B. Fuller and other credible witnesses, that the victim of the accident underwent radical character changes, and became what alienists would call a traumatic paranoiac.

In what Page considers "a fair and comprehensive classification of the various cases of so-called concussion of the brain" (page 28), he omits reference to cases where the injury may be slight, and the after-effects grave and lasting, or where *contre coup* may give rise to symptoms. The writings of alienists and neurologists abound in such instances.

Leading up to his "shock" theory he affirms cerebral concussion to be cerebral paresis of the heart, and of the bodily functions generally.

Then (page 30) the reasons Lidell gave for regarding the brain more liable to contusion than the cord Page

^{* &}quot;Clinical Surgery." Volume I, page 86.

[†] Journal of the American Medical Association, Dec. 15, 1888.

urges are applicable to concussion. When his cerebral data are incomplete, and concussion of the brain is dodged as cerebral heart paresis, his cord analogies must be inperfect.

The case (page 40) of Sir Wm. Gull,* "paraplegia two days after a violent exertion in lifting a heavy weight, softening of the cord opposite the fifth and sixth dorsal vertebræ, no injury of the membranes, ligaments or bones of the spine, death after six weeks" would disprove the necessity of spinal column lesions where the cord had been injured, and a severe bend is less liable to damage the structure of the cord than a blow, which can, and doubtless does, violently propel the soft tissues in its bag of water about its encasing bony canal. Holmes't objection to concussion of the spine as a designation, inasmuch as "we do not speak of concussion of the skull," page 59, does not properly consider that spine is used in that connection as the spinal column and its contents, and that we speak of concussion of the brain as the part injured, instead of concussion of the skull, though head concussion, as including both skull and brain would compare favorably, by analogy, with what is usually meant by spinal concussion. Etymological quibbling belongs to a dead and gone epoch: the pituitary gland secretes no pituita, and is not even a gland, the arteries do not contain air, nor is the sacrum any more sacred now than other bones in the body. If we know what is meant by an expression, it matters little how inexact it may be, and the term concussion of the spine has passed into such general use it is doubtful if it can be changed.

The best we can, and should do, would be to clearly determine what we mean by the words when we use them.

Spinal anæmia, as a speculation, is disposed of (page 93) by the quotation from Erichsen, "a clinical expression possibly, rather than a well-proved pathological fact."

As to the jeremiad on page 94, et seq., that Erichsen had

^{*} Gny's Hospital Reports, 1856 and 1858. Vol IV., page 189. t "System of Surgery." Vol. II., page 370, fost-note.

so few *post-mortem* examinations to record, in verification of his functional disturbance theories, it may well be asked how many autopsies have we in print of the initial stages of any disorder whatsoever? Even so common a disease as pulmonary consumption has left the pre-tubercular stage largely conjectural. What is the pathology of chorea?

On page 99 the claim is made "that with very rarest exception, the spinal cord is absolutely uninjured in these cases of railway collision, shock, or jar, and that now, not less than of old, the spinal cord maintains its supremacy as the most securely protected of all the organs of the body." A not very modest assertion when we reflect that histological and pathological conditions abound in the spinal cord of which Page could know nothing. Take the single instance of the terrible disease known as Landry's ascending paralysis, indisputably destructive of the functions of the spinal cord, and often proving rapidly fatal, with no discovered lesion in the cord or elsewhere. "Nec silet mors," of the London Pathological Society, may as well be snubbed in this instance by the "Mors silet," of Page, in speaking of spinal concussion. As well claim the impossibility of death from melancholia, because no associated lesions are demonstrable in the brain.

Erichsen, page 70, quotes Dr. Lockhart Clarke,* as affording the only account, "with which he was acquainted, of a *post-mortem* examination of the spinal cord of a person who actually died from the remote effects of concussion of the spine from a railway collision"

The antero-posterior flattening of the cord, adherent posterior membranes, and the structural changes in the posterior columns of the cord, even without the antemortem history, would declare the case to have been one of locomotor ataxia, but Page asks how is the limitation of the pathological changes to this posterior portion of the cord explained, and intimates that the disease had

^{*} Transactions of the Pathological Society of London, 1866, Vol. XVII.

been latent in the system and developed by the accident.

Page would aid science greatly were he to describe in what ataxic latency consists. Had any other disorder followed the concussion, the same pre-existing latency could as properly have been urged.

That tabes dorsalis has been originated by a blow upon the back, and that during a remission of the disease it may be restarted by spinal injury, is, I think, sufficiently well proven and, a priori, may be considered quite probable enough not to justify Page's doubt, that there was any association of the lesion with the concussion.

In view of the discussion now proceeding, as to whether the initial stages of this disorder consist of perenchymatous neuritis, interstitial sclerosis, vascular, meningeal or posterior root ganglia disease, Shaw's* assumption that there is no precedent inflammation, and, hence, only a hypothetical relation with concussion, is unwarranted, and the "weighty and well-nigh overwhelming" nature of the objection with which Page challenges Erichsen, does not exist.

As to the limitation of a lesion following upon a general or distributed blow, it is not necessary to suggest that a chain may break at its weakest link, for were the links equally strong, vibrations, or stress, must culminate somewhere, and a weak portion may escape injury while a stronger part may succumb, if subjected to the major strain, whether the blow was directly or remotely received. Thus one or two coaches, in a railway collision, are sometimes destroyed, while all the other coaches escape harm.

Page's complaint, that railway collisions have done nothing to advance our knowledge of the physiology and pathology of the cord, page 106, is justified or not, depending upon how we look at the matter. Any injury, however received, that results in death, and affords opportunities for an autopsy, may advance knowledge if

^{* &}quot;Holmes' System of Surgery," 2nd ed., Vol. II., page 377.

the skilled pathologist examines the tissues, but it is rare that this is the case. Owing to the general ignorance and want of medical animus of many practitioners, microscopists are rarely furnished the material they need, however abundant it may be. Byrom Bramwell* concludes his excellent work with the request that his readers may send him spinal cords of typical, interesting or rare cases. If such neuropathologists as E. C. Spitzka, or N. A. Starr, of New York, were provided with such specimens in sufficient quantity, the probabilities are that railway collisions would afford special knowledge that we do not now possess. It is sad to reflect, however, that the majority of medical men in our country have never seen a human spinal cord, would not recognize one if they did see it, nor would they know how to take it from its bony canal, and certainly would attempt to preserve it in alcohol instead of Müller's fluid, and be surprised to learn that alcohol would unfit it for microscopic examination.

LeGros Clark's† views are quoted, page 109, regarding spinal concussion cases: "The most numerous where there is no evidence of physical lesion, and in which the symptoms supervene at an interval, longer or shorter, after the occurrence of the shock, in some which are characterized by loss of muscular strength, shrunk limbs, defective power in co-ordination, feeble exercise of motive volition, and even paralysis and imbecility, there must be organic change which is often progressive." He also mentions cases of "deteriorated health and nerve energy, and in these the impaired health is due to the indirect influence exercised on the organs of assimilation." He traces these to spinal shock directly, which "often assume a more aggravated character as time elapses."

Two cases of "simple concussion of the spine" are narrated, from falls on the nates and back, with para-

^{* &}quot; Diseases of the Spinal Cord," 1884.

^{† &}quot;Lectures on the Principles of Surgical Diagnosis," 1870.

plegia following, which passed away in a few months, in which cases he assumed extravasation with resorptions in the theca or canal. In the absence of electro-diagnostic means of examination this suggestion is valueless, though it is likely that organic mischief may occur from such accidents, from which such speedy recoveries are not liable to take place.

Clark then deals with a "special form of railway concussion," the sequelæ of which he thinks are explained in a measure, "by the influence of emotion," but the more immediately induced diversified results he ascribes to derangement of the organic nerves causing the excretory functions to be imperfectly performed, the organic chemistry to be deranged and the blood poisoned.

He is therefore disposed to regard these cases of socalled railway spinal concussion as generally instances of nervous shock rather than of special injury to the spinal cord.

This suggestion of LeGros Clark, Page amplifies in a subsequent chapter, as it enables him to substitute "Shock to the Nervous System" for the older term "Spinal Concussion," and he adopts just as untenable hypotheses to establish his "Shock" as can be found in support of the title he decries. Chapter II. is concluded with the statement that "lesion of the spinal cord from simple concussion blow is very rare indeed, and that the existence of meningo-myelitis, an easily recognized pathological condition, as a remote or early consequence of some vibratory effect upon the cord, still lacks the solid basis of established observation." Had this paragraph been constructed by an able lawyer it could not have been more misleading, for it appears to deny more than will be found in its careful reading. The functions of the spinal cord are frequently badly deranged by bodily accidents, of which "simple concussion blow" is but one form of concussion, the occurrence of which may be properly inferred from the symptoms and the nature of the accident combined; and meningo-myelitis as remote and early consequences of such accidents, is of very common occurrence in just such cases. In fact, Page's criticisms of Erichsen's cases contain many references to meningeal and myelonal inflammations in accounting for alleged functional disorders.

He tells of a case of traumatic lumbago, page 114, which may have been genuine enough as such, but as the patient had no symptoms of spinal concussion it does not disprove the possibility of that ailment having occurred in others.

Further along, page 118, et seq., single symptoms such as tenderness of the back, fear of moving, weakness, tingling, occurring alone or with a few other difficulties in the absence of the major phenomena of concussion, are dwelt upon with lawyer-like adroitness, in favor of a ligamentous or muscular strain rather than a nerve-center implication. His chapters IV. and V. consider LeGros Clark's suggestion of "Shock to the Nervous system" to account for the symptoms of concussion. He maintains that fright alone may cause the gravest disturbance of function. But neither fright nor nervous shock, as he describes the latter, unless he extends his shock to the nerve-centers in the spinal cord, can account for the very fair array of concussion symptoms described on page 167, in the case of S. W., though the face, arms and legs are mainly noted as struck. It is extremely doubtful if fright can be properly assigned as the main cause of the ailments detailed. At least, Page remains unsupported by other writers in regarding mental shock alone as sufficient to cause concussion symptoms, unless we regard the Charcot fiasco in this direction as helping the view. This will be considered when we treat of Hysteria.

Another case of "fright" follows, page 170, though the patient was "terribly shaken" in a derailed coach. This case "entirely recovered" but "retired" from business. "In the order of their frequency as gathered from a careful survey of a large number of cases" he enumerates the following symptoms:

Sleeplessness.
Disturbances of the circulation.
Headache.
Nervousness.
Excessive sweating.

Asthenopia and pupillary dilatation. Loss of memory. Catamenial derangements. Retention of urine.

A glance suffices to show that Page's "nervous shock" does not coincide with symptomatology with spinal concussion, for but few of the major disturbances are included in his "shock" symptoms, and inconstant troubles are introduced.

On page 184 is the case of a man, forty years of age, who was "violenty shaken" in a railway collision, but who was able to go home; the next day he was delirious, complained of feeling seriously injured, but there were no external evidences of a bodily hurt. He died on the thirty-seventh day and "no organic disease was found on post-mortem examination in any of the viscera. The lungs were greatly congested and the cavities of the heart were distended with blood, as if death had occurred from failure of respiration and circulation." Vulgarly translated, he died for want of breath and because his heart stopped beating.

This and the case of the nineteen-year old girl, next mentioned, who died in five weeks after a similar accident, no brain or cord lesions existing in either, may fairly parallel Boyer's cases of sudden death, only, while it cannot be affirmed that the brain or cord were the seats of the cause of death, neither can it be denied that they were. The "fright" theory admits a functional brain disturbance and cerebral concussion may exhibit no lesions of importance. Reverting to Page's dislike to admit such a thing as a functional disturbance of the cord from either fright or violence, by analogy why may not the cord participate in fright or shock influence similarly and be functionally deranged?

The acme of speciousness is reached in the query, page 185, "whether death may not be the result of some effect produced upon the blood itself, whereby the natural

processes of nutrition are arrested, and life comes to an end."

Would it not be as well to admit that the central nervous system is as likely to be paralyzed by a blow or jar as are the amœboid and red blood corpuscles?

The law of logical parsimony would allow us to adopt the simpler explanation. We positively know that spinal derangement can and does produce extensive nutritive failure, notably in progressive muscular atrophy. We do not know that the blood may be shocked to cause the same condition. Then why try to substitute blood shock for spinal concussion, unless "nervous shock," which may mean the same thing, everything, anything, or nothing, is not thought sufficient?

If these "nervous shock" symptoms, which Page mentions, belong to Hutchinson's fourth stage of cerebral concussion, as the former suggests, how does the brain escape the other preceding stages? Unconsciousness is remarkably absent in spinal concussion cases and present in cerebral concussion. This effort to transfer the disturbance from the cord to the brain is ludicrous.

"Imperfect recovery of the vasomotor system and easy production of local turgescence of vessels," page 195, is quoted from Hutchinson's description of the cerebral concussion period of convalescence. The turgescence may be from imperfect spinal control of the sympathetic system, particularly when we have spinal ganglia regulating visceral blood supply, and Budge's center in front or ventrad of the vertebra prominens, connected with cerebral vessels. Besides, the cord itself is in direct connection with the brain, and cerebral symptoms may be induced by spinal interference; but Page is desirous of ignoring the cord as presenting physiological or pathological possibilities where railway accidents are concerned.

Chapter VI. treats of "Functional or Neuro-mimetic Disorders;" the heading indicating that organic disease is genuine but functional disorders are not, and the text seeks an explanation of many such conditions as paralysis, convulsions, nervous irritability, prostration, etc., in hysteria or other mental disorder. This and the succeeding chapter on "Malingering," will be referred to later in connection with the reasoning thereupon of other authors.

Page concludes with a table of 234 collision cases, which he wishes "could have been more complete and better than it is, but the migratory habits of persons in the poorer walks of life have prevented the success of repeated inquiry and search."

Electrical tests are not noted as having been made, the descriptions are brief, and mental derangements are unmentioned as connected with the accidents.

Of these 234: 10 died; 9 are ambiguously recorded; 3 were malingerers; 106 recovered; 66 cannot be traced; 27 partly recovered; 13 did not recover.

Nine of these cases presented evidences of spinal cord injury; the remainder were without such injury.

In only one case was an autopsy held, from which it would appear that Page encountered the same difficulty in making, or neglected to make, the spinal cord investigations, a failure that he regards as so blameworthy in other physicians.

In the column of remarks annexed to the cases, rheumatism, fright, old age, phthisis, are frequently suggested as the real causes of death, and recovery was good ground from which to suspect malingering. Fraud abounded in most of the claims made. It would be interesting to be able to examine the records of the plaintiff's lawyers in these cases.

Note.—The succeeding chapters of the book consist of "Recent Discussions of Spinal Concussion;" "Oppenheim on Traumatic Neuroses;" "Cases of Spinal Concussion;" "Anatomy and Physiology of the Spinal Cord and Column;" "Symptomatology of Spinal Concussion," "Diagnosis;" "Differential Diagnosis; "Pathology;" "Therapeusis;" "Medico-Legal Considerations."

Influence of the Nervous System on Renal Functions.*

By Dr. Francesco Spallitta, Italy.

THE secretion of urine is a very complex process, and the different theories instituted with the view of explaining its mechanism, have not completely met all the objections to which they have been subjected.

Although the doctrine of Bowman, advanced at a time in which there was but imperfect knowledge of the structure of the kidney, was accepted by all the physiologists of that day, it was very soon opposed by the doctrine of Ludwig and his school, which affirmed the intimate dependence of the secretion of urine on the blood-pressure.

Valid objections to Ludwig's theory were supported by experimental researches; nor were the doctrines of Kuss and Heidenhain more fortunate. The result is that, in the present state of science, it is impossible to adopt any exclusive theory which may explain all the phenomena related to the intimate mechanism of the renal function. It has alone been established that there are three principal factors to which the urinary secretion is closely bound; these are the pressure of the blood, the morphology and chemistry of the blood, and renal epithelial action.

In the researches which have been instituted it has not been considered whether there may subsist certain physiological relations between the nervous system and the renal function. The intervention of the nervous system in the physiological explanation of this function, seemed to be unnecessary. The sole tendency seems to have been to consider the urinary secretion as a simple

^{*} Translated from "Il Pisani," Palermo, 1888, by JOSEPH WORKMAN, M. D., Toronto, Canada.

mechanical act, effected mainly by the pressure of the blood on the glomerules of Malpighi.

Claude Bernard was the first who sought to demonstrate that mechanical conditions alone did not suffice to effect the urinary secretion, but that the intervention of a physiological agency was necessary; that in fact, when all the mechanical conditions are conceded, the secretion may yet be impeded by acting on the nerves of the kidney.

The kidney, says Bernard, cannot be regarded as an inert filter. The pressure of the blood has, without doubt, an important part, but it is a passive part; the active part belongs to the nerves which prepare, between the vessels and the other anatomical elements of the kidney, those relations which render the accomplishment of the function possible. In the renal function it must be admitted that nervous action is the efficient cause; and it is only after the nerves have put the kidney into an active functional state, that mechanical causes can exercise their influence.

When, however, we may desire to study the influence of the nervous system on the renal function, the problem presents itself as a very complex one; for, in addition to studying the influence which the peripheral, nerves and the different parts of the central nervous system may exercise, whether directly or reflexly, on the action of the kidney, we must also turn our attention to the influence which the nervous system has over the different factors which contribute to the mechanism of this function; since it is manifest that the alteration of one of these factors must introduce notable modifications into the excretions of the kidneys.

I shall simply limit myself to speak of the blood-pressure as one of the more essential elements that take part in the mechanism of the functions of the kidneys, and as one of the factors of which I shall often have occasion to make mention in the course of my study, as it has been, in my opinion, the chief rock encountered in the experimental investigations which have had as their object a clear perception of the relation of the nervous system to the function of the kidneys.

Increase of blood-pressure and of the quantity of urine often run parallel; suffice it to say that some diuretic substances exhibit their influence by re-enforcing cardiac action, and thus producing increased blood-pressure.

It cannot be established, as a constant and absolute fact, that there is a bond of dependence between the blood-pressure and the secretion of the kidneys, in the sense that increase or decrease in one of them shall produce increase or decrease in the other. Under great variations of the blood-pressure, the renal function is often seen to remain unchanged.

Pawlow showed that after copious drinks of water there was great increase of the urinary secretion, whilst the blood-pressure diminished. In like manner, when water is injected into the blood, there is no increase of blood-pressure, but on the other hand there is a great increase in the quantity of the urine. If, instead of water, the same quantity of blood serum be injected, the quantity of urine is not increased. Thus Powfick and Albertoni were able to demonstrate that it is not the augmentation of the volume of blood that determines, by its mechanical effects, increased discharge of urine from the injection of water.

The composition of the blood may also influence the renal function, independently of its pressure. Thus urea, uric acid, the salts of urine, injections of the hydrate of chloral and of the nitrate of soda, cause a notable increase of the quantity of the urine, without augmenting the blood-pressure.

Urtimowitsch believes that the urinary secretion is arrested as soon as the blood-pressure falls below 50 mm. of mercury. Grützner saw secretion of urine even with a pressure of 30 mm.; whilst Barney and Sachs did not think that a limit could be fixed for the action of the

kidneys, as they observed urine coming forth with a pressure below 50 mm. of mercury.

These considerations, which I have so far desired to premise with regard to the physiological relations of the pressure of the blood and the secretion of urine, appear to me to be of special importance in the study of the influence of the nervous system on the action of the kidneys. The non-existence of a relation of dependence between the one function and the other, should always forearm us in the interpretation of the experimental facts which we shall proceed to exhibit.

Before entering into the exposition of the studies performed by us in our subject, and of the experimental contribution presented in our researches, I think it useful to make a few summary anatomical observations on the innervation of the renal organ.

The most of the nervous fibres that proceed to constitute the renal nerves, depart from the great and the little splanchnic; it is probable that there are some fibres which go from the ganglia of the solar plexus, without being in relation with either of the splanchnics.

The great splanchnic nerve is constituted of branches which depart from the sixth, seventh, eighth and ninth thoracic ganglia, and these in succession unite to form a single trunk. This nerve traverses the corresponding pillar of the diaphragm, and enters the external angle of the corresponding semilunar ganglion.

The little *splanchnic nerve* is formed by branches which depart from the tenth, eleventh and twelfth thoracic ganglia. This little nervous trunk, after traversing the diaphragm, divides into three branches, one of which anastomoses with the great splanchnic; the other passes into the solar plexus; the third, which is the largest, and sometimes the only one, enters directly into the renal plexus.

The semilunar ganglion, which by its external extremity receives the trunk of the great splanchnic nerve and some threads of the little splanchnic, sends out from its internal extremity numerous branches, which proceed

towards the median line and anastomose with those of the opposite side, to constitute the solar plexus. The semilunar ganglion on the right receives besides, in its internal extremity, the termination of the right pneumogastric, thus constituting the memorable shank (ausa) of Wisberg.

Many nerve threads go out from the solar plexus to the neighboring arteries, and accompany them to their hnest ramifications. Two secondary plexuses are thus formed; between these are the two renal plexuses, one of which on each side accompanies the renal artery.

The renal nerves proceed from the renal plexus, and enter into the hilum of the kidney. Their termination is not yet known.

The kidneys are therefore anatomically dependent on the system of the great sympathetic, and by this means dependent on the cerebro-spinal axis.

I decided to study separately the influence of the diverse parts of the central nervous system, and of the peripheral nerves, on the action of the kidneys. I shall therefore exhibit in separate chapters the influence of the medulla oblongata, the sympathetic and the renal nerves, the nerves of the spinal medulla and those of the brain, and pneumogastrics, on the renal function. I have lately collected some notes relating to the influence of diseases of the nervous system on the urinary secretion, as neuropathology also may throw light on many of the problems of the physiology of the nervous system.

Influence of the Medulla Oblongata on the Renal Secretion.

Is there in the nervous system a centre of innervation or the renal function? What are the special nervous paths which lead from this centre to the kidneys, to influence the secretion of the urine? These are most interesting problems in the physiology of the nervous system in relation to the renal organ—problems much discussed and not completely solved.

The experiments of Kriemer and Biddee had shown that the secretion of urine is not suspended by removal of the brain, nor by destruction of the spinal medulla, from its cervical portion downwards, the medulla oblongata being left entire.

That the integrity of the medulla oblongata alone is not indispensable for the maintenance of respiration and circulation, is proved by the fact that it is not sufficient to sacrifice an animal and to practice artificial respiration, in order to see the urinary secretion continuing: it is necessary that the animal shall not be sacrificed by section of the bulb.

On poisoning an animal with curare, and maintaining it in life by artificial respiration, the secretion of urine is seen to continue; but if on curarising the animal the bulb be cut, artificial respiration does not suffice for the continuance of renal action (Cl. Bernard).

The integrity of the medulla oblongata being therefore an essential physiological condition for the renal function, it is manifest that in this nervous centre is the point of departure of the innervation of the kidneys.

This fact has been rendered still more authoritative by the classic researches of Claude Bernard, which clearly showed the very notable modifications which the urine undergoes, both in quantity and composition, after puncture of the floor of the fourth ventricle.

The French physiologist was able to demonstrate that by puncturing the floor of the fourth ventricle in the median line, at the level of the origins of the vagus nerve, and appropriately between the roots of the auditory nerves and those of the pneumogastrics, there was produced in the rabbit, after an hour or even less, glucose in the urine, with great augmentation of its quantity. By making the puncture somewhat higher, in this ventricle, the urine became less abundant and the sugar scarcer, but it contained albumen.

Increase of the quantity of urine and the entrance into it of sugar and albumen, are phenomena independent of

the others, and they may be produced separately. Thus, by puncturing the medulla oblongata a little below the origin of the auditory nerves, polyuria is produced, without the entrance of sugar or albumen. After section of the pneumogastrics and the great sympathetic, puncture of the fourth ventricle produces diabetes. Section of the spinal medulla in the lower portion of the cervical region, arrests the effects of puncture of the fourth ventricle; and the animal, not only does not become diabetic, but also sugar is not found in its blood; neither does polyuria result, if, together with the puncture, section is also made at other points of the cervical or dorsal medulla.

Besides these changes of the urinary secretions, such as polyuria, glycosuria and albuminuria, Bernard was able to discover, after puncture of the floor of the fourth ventricle, other remarkable modifications in the composition of the urine. Thus the urine of the rabbit, which usually is turbid and alkaline, becomes after the puncture, clear and acid, with increase of the phosphates.

Schiff, on wounding the cerebral peduncles, saw produced albuminuria and acidity (in animals which have alkaline urine), phenomena which Longet also saw produced by lesion of other parts of the cerebral system, and especially of the intercranial fifth pair.

Passing over the part relating to glycosuria and artificial diabetes, as it does not enter into our subject, to what cause is polyuria due when it follows puncture of the fourth ventricle? According to Vulpian it is the result of the associate action of two morbid disturbances: on the one part the excitation of the vaso-dilator fibres of the kidneys, and on the other an irritation of the secretory nerves of these organs.

[Note.—Although the existence of secretory nerves, properly so called, cannot be positively demonstrated, Vulpian does not hesitate to admit them, trusting that accurate researches will yet fill this lacuna in our knowledge of the innervation of the kidneys.]

Vulpian also thinks it possible that the majority of the causes which produce polyuria, in affecting the nervous system, act through a reflex mechanism, which has for its centre the medulla oblongata. Thus it is that the polyuria, which is produced after some lesions of the spinal medulla, takes place, or after contusions in the regions of the liver, the kidneys, etc. From the point of the lesion an irritation sets out, which passes through the bulbar centre and is reflected on the kidneys. There are then produced modifications in the renal circulation which are comparable to those which take place after a lesion of the splanchnic nerves, sufficient to determine polyuria and albuminuria.

We are therefore able to concur with Echhard and Bernard in fixing the centre for the secretion of urine in the medulla oblongata.

Influence of the Sympathetic and the Renal Nerves on the Function of the Kidneys.

To the nervous paths of communication of the medulla oblongata, the centre of innervation for the urinary secretion, with the kidneys, which are the organs of secretion, I have in a special manner directed my attention in the experimental researches which I have undertaken, and which I shall relate afterwards when speaking of the influence of the spinal medulla on the renal function.

The researches heretofore made on this subject have left the question nearly unsolved; and though some have advanced the supposition that there may be found in the spinal medulla, and properly in its cervical portion, nervous fascicles, special to the urinary secretion, this has by others been denied, on the support of experimental researches; and by these persons the alterations of the secretion of urine, following lesions of the cervical medulla, have been attributed, not to direct, but to indirect influence on the kidneys, that is, to modifications bearing on the pressure of the blood.

I shall premise that up to the present time the results of my experiments have been in part like, and in part dif-

ferent from those previously obtained by other experimenters, my deductions however are opposite. The question has been much controverted, and I do not presume to have entirely solved it. I shall state the experimental facts and the results I have obtained, and from these I shall try to draw the conclusions which I judge most rational.

In the first place, however, I deem it useful to call to mind and to study the influence which the great sympathetic and the proper nerves of the kidney bring to bear on the renal function, in order to enable us to find in these researches some data, which may be placed in relation with the phenomena observed after lesions of the spinal medulla, and which may be of service in their interpretation.

A series of researches has been directed to the study of the modifications which the urinary secretion undergoes from interrupting the continuation of the nervous filaments that enter the kidney, accompanying the artery.

Brachet cut transversely through the renal artery and nerves. He then joined with a canula the cut ends of the artery, with the view of re-establishing the renal circulation. The urine became bloody and albuminous.

The like results were obtained by Muller and Peipers, by a different operative process. They ligatured the vasculo-nervous skein in such a manner as to tear the renal nerves; the ligature being afterwards removed, the blood circulation in the kidney was re-established. In addition to blood-reddening of the urine, they found softening of the renal tissue, the same as was observed by Ludwig and Shultz also, after ligature of the renal nerves and vessels. More recently the experiments of Moreau have confirmed the results of Muller and Peipers.

According to Wittich the cutting off of the nerves proper to the kidney produces neither hæmaturia nor albuminuria; Vierordt therefore has said that this effect may depend on a disturbance of the blood circulation, induced by the operative process. Wittich distinguishes, in the renal plexus, secretory nerves and vasomotor: the

former are found between the renal artery and the vein, the latter accompanying the artery only. By destroying the secretory nerves, only a little albumen is found in the urine, but by destroying the vasomotor nerves both albumen and degeneration of the kidney are produced.

After section of the renal plexus Pincus observed arrest of the secretion, but Eckhard found polyuria.

No alteration of the renal tissue, after ablation of the nerve threads which accompany the renal artery, was found by Best, Rauvier and Brown-Sequard; the lastnamed found only a slight congestion of the kidney.

Vulpian diligently cut all the nerve threads on both the artery and the vein of the kidney, or around them; and in his experiments neither sphacelus nor softening of the kidney ever appeared. He thought that these changes should be attributed to the violence done to the renal vessels during the operation, by which intravascular coagula are produced, which disturb or impede the circulation in the kidney.

The studies directed to the demonstration of the influence of galvanization of the several nerves over the secretion of urine, are certainly important.

Bernard, on galvanizing the renal nerves, observed that the flow of urine ceased throughout all the time in which the excitation was kept up. This result was confirmed by Vulpian, who, on electrizing the renal nerves, saw the renal tissue become pale, and at the same time the calibre of the renal artery and the vein reduced more than half. Vulpian thought that it could not well be decided whether this diminution of volume was due to a constriction of the small vessels of the kidney, or to the direct action of the electric current on the renal artery and vein.

Huxley, on irritating the renal nerves, observed an arrest of the urinary secretion, and he saw the venous blood which flowed from the kidney turn black; he believed this to be an effect of diminution of the blood-pressure, in the Malpighian glomerules.

In experimentally studying the influence of electric excitations on the urinary secretion, we conducted the experiments in the following manner:

On a dog we laid bare one kidney, and cut with great care all the nerves passing to it. A canula was introduced into the corresponding ureter, so as to collect the urine which came forth. The kidney was afterwards involved in a wire of platinum, which was placed in communication, in two isolated points, with the reophores of an electric current. One of the usual keys of Du Bois Reymond served to enable us to close or open the circuit, according to requirements. We employed both the induced and the constant current.

FIRST EXPERIMENT.

A dog weighing seven and one-half kilograms. The left kidney was laid bare, and a fistula was made in the ureter. The nerve trunks going to the kidney were cut. The urine became bloody.

For the purpose of excitation by the induced current, the slit of Du Bois Reymond, strengthened by the pole of Grenet, was used. The normal quantity of urine which came from the fistulous ureter (in ten minutes) was sixteen drops. When the two rochettes were at the distance of 40.20 centimeters, the electric excitation of the kidney did not cause any notable modifications in the quantity of urine; but when the current was strong, that is with the supraposition of the two rochettes the flow of urine was suspended as long as the excitation lasted.

SECOND EXPERIMENT.

The same dog as in the first experiment. The current from six elements of Daniell was used. The secretion of urine was arrested when the current passed into the organ, but it recommenced when the current was interrupted.

The electric excitation, reaching the kidney directly, when the nerve trunks which go to it have been cut, has

then the same effect as the excitation of the uncut nerves; and the arrest of the urinary secretion is very probably due to the spasmodic contraction of the small arteries of the glomerules of Malpighi, produced by the excitation.

As respects the influence exercised on the kidneys by the sympathetic, and by the splanchnic branch which proceeds from it, "experience," says Vulpian, "has shown that which anatomy permitted us to anticipate. In fact, as in the cord of the great sympathetic in the thorax, above the point from which the splanchnics go forth, we ought to find the same fibres which proceed to form these nerves, so should the effects of section or of excitation of the splanchnics be analogous to the section or the excitation of the sympathetic above the point from which they depart."

Bernard, after section of the great splanchnic, saw the urine, which before was absent, flowing from the canula placed in the ureter of the corresponding kidney; he also saw the diameter of the renal vein decreased, and the blood, which before was red, becoming black. On afterwards galvanising the peripheral tract of the cut splanchnic nerve, he observed cessation of the flow of urine.

Knoll, after section of the splanchnic, observed an increase in the quantity of the urine, with a notable increase of the corresponding urea.

Vulpian, on cutting the splanchnic nerve in curarised dogs, at three centimeters above the left suprarenal capsule, saw the blood contents and the volume of the corresponding kidney increase, and a considerable increase in the quantity of urine, which at times became strongly albuminous. Under the microscope, neither hyaline cylinders, nor epithelium of the renal tubes, nor blood globules were found; fatty granulation alone was observed.

Contrary to the opinion of Knoll, Vulpian attributes the albuminuria to the section of the splanchnic nerve, and not to the operative manipulation; hence he believes it possible to have albuminuria by disturbances of the vasomotor innervation of the kidney, without actual change of its texture.

By excitation of the peripheral extremity of the splanchnic nerve, Vulpian observed that the kidney became pale, the veins contracted, and the secretion of urine ceased.

According to Vulpian, the physiological action of the cord of the sympathetic on the function of the kidneys, above the point of departure of the nerve fibres which constitute the splanchnics, is analogous to that on the splanchnic.

The results obtained by Peyrani were different. He saw, after section of the cervical sympathetic, a decrease of the quantity of urine, but electric excitation caused its increase.

The experimental results which we have related, lead us to conclude, with Vulpian, that it is by means of the sympathetic that the cerebro-spinal nervous centres act on the circulation and the function of the kidneys.

Influence of the Spinal Medulla on Renal Function.

Claude Bernard, in his experiments on artificial diabetes, had demonstrated that the effects of puncture of the floor of the fourth ventricle were arrested, if the spinal medulla was cut in its cervical portion.

Eckhard resolved to study experimentally the part which pertained to the nervous system in the renal function, and, admitting that in the medulla oblongata was the centre for the urinary secretion, he sought above all for the special nervous paths which should carry the excitations from the medulla oblongata to the kidneys. He demonstrated that section of the spinal medulla, between the sixth and seventh cervical vertebræ, was immediately followed by an enduring arrest of the renal secretion, and the same result was constantly obtained by cutting higher up in the cervical region. Hence, he con-

cluded that the cervical medulla was necessary for the urinary secretion.

However, Ustimowitsch, in 1870, believed the phenomenon to be in relation with the blood-pressure, as he was able to establish the fact that the secretion was greater or less, according as the blood-pressure rose or fell.

This fact found its counterpart in the observations of Bernard, who had demonstrated that by cutting or puncturing the spinal medulla at the sixth cervical vertebra, apparent movements of the intestine, with diminution of the circulatory action, were produced; also diminution of the secretions, and diminution and even cessation of the renal secretion.

By acting on the medulla below the cervical plexus, there was also diminution of the blood pressure, which had as its effect a diminution of the quantity of urine.

The experiments of Eckhard were repeated by Heidenhain. In a rabbit he cut the cervical medulla, and he injected into the jugular 5 c.m.c. of a solution of indigo. After an hour, seeing no longer a drop of urine, he sacrificed the animal. In the dissection of the kidney the cortical substance was seen to be colored blue, and the pyramids were colored, the contorted tubes and those of Henle, were full of granulations and colored crystals. As filtration of water had been entirely suspended by the section of the medulla, a current had not been produced in the uriniferous canals, and the coloring substance must have been secreted where it was found. Heidenhain therefore concluded, as Ustimowitsch, that the renal secretion increased or diminished as the blood-pressure increased or diminished.

Ustimowitsch thought that he demonstrated this relation of dependence in the following manner: He injected into the blood of animals, in which he had arrested the urinary secretion by cutting the cervical medulla, some grammes of urea. He saw the secretion returning, and the blood-pressure at the same time increasing. But as this increase of pressure is not constant, and the injection

of blood or other substances which do not influence the pressure, such as the hydrate of chloral and the nitrate of soda, has the same effect, the return of the secretion of urine, after the injection of urea, should be ascribed to quite a different cause. (Heidenhain).

The question was taken up by Barney Sachs, who, under the direction of Goltz, studied the influence of the spinal medulla on the renal secretion. On making transverse sections of the spinal medulla at different heights, he tried to see the modifications which took place in urinary secretions. From his experiments he came to the following conclusions:

That the spinal medulla may be cut through, or in part, at the most different points, and the renal secretion is not arrested but often only a little influenced.

That by the section alone of the cervical medulla, the secretion of the kidneys diminishes and even ceases, but this fact is in relation with the *lowering of the blood-pressure*.

That if there are regulating centres of the urinary secretions, they should be sought for in the spinal medulla, between the second dorsal vertebra and the third cervical.

From the quoted experiments, which include nearly all that has been done on this subject, the part that pertains to the spinal medulla, in the renal function, does not appear to me well established, and so much the more so, as the paths of communication of the medulla oblongata with the kidneys, remain almost unknown. Lesions of the cervical medulla bring notable changes to the urinary secretions, but is this influence due solely to the diminution of the blood-pressure, as first said by Ustimowitsch and afterwards by Heidenhain? Or is it due to the renal disturbances, as Eckhard first supposed?

I have thought it useful to fall back on the subject and to undertake a series of experiments, in order to study what might be the nature of the influence which the spinal medulla, especially its cervical portion, may have over the action of the kidneys. I shall say a few words on the experimental method adopted by me.

I decided on cutting the spinal medulla at different heights, and on observing the effects produced on the urinary secretion. With respect to the changes which happened in the secretion, because of the spinal lesions, I always attached but little importance to the quantity of urine secreted, as it might depend on some other cause than the blood-pressure. And as the problem, which I proposed to myself, was that of determining whether lesions of the cervical medulla influenced the renal secretion by changing the blood-pressure, or by the destruction of the nerve fascicles proper to the renal secretion, I was obliged to set aside any result which might depend on this pressure, such as the greater or less quantity of urine, and to ascribe value only to the cessation, or the contrary, of the secretion, or to the chemical changes of the urine. In the operative process I endeavored to diminish, as much as possible, loss of blood.

For the purpose of collecting the urine, I wished to avoid injuring the urinary apparatus. Immediately after section of the medulla I took care to empty the bladder with a catheter, if the animal was a female, but if a male I compressed strongly the hypogastric region, or I closed the mouth and nostrils so as to oblige the dog, by the state of asphyxia, to pass water.

An exact and safe criterion was, however, necessary, in order to know whether the urine discharged after the operative process, or that found in the bladder, had been secreted before or after the spinal lesion. For this purpose I availed of the chemical process adopted by Barney Sachs, that is, I injected under the skin, immediately after section of the medulla, a solution of the iodide of potassium. It was then certain that if the urine gave the reaction of iodine, it had been secreted after the lesion of the spinal medulla.

After the operation the animal was placed in an appropriate cage, the bottom of which was inclined, and

drilled with holes, in such a way as to enable us to collect the urine in a receiver placed beneath.

After every experiment an autopsy of the animal was made to ascertain whether the section had been made at the intended point, and whether the medulla had been completely cut through.

Thus were my experiments conducted, and they were numerous, because I believed it necessary that every result should be several times tested. I shall report only those which I regard as necessary, passing over those adopted for comparison.

FIRST EXPERIMENT.

A female of medium size. The spinal medulla was cut transversely between the third and fourth dorsal vertebræ. The bladder was previously emptied with a catheter. A solution of the iodide of potassium was injected after the section. The animal was placed in the special apparatus in which the urine passed by her could be collected. On the following day she was killed by wound of the heart, about seventeen hours after the operation. She had discharged 10 c.c. of urine, and 25 c.c. were found in the bladder. The urine, with starch and chlorine water, gave the known reaction. It did not contain any albumen.

SECOND EXPERIMENT.

A small dog. The spinal medulla was cut between the second and third dorsal vertebræ. The same result, as to the secretion of urine, was obtained as in the preceding experiment. The urine, after nine hours, amounted to 20 c.c.; it was devoid of albumen.

THIRD EXPERIMENT.

A small female dog. After emptying the bladder the spinal medulla was cut between the first and second dorsal vertebræ. The animal survived about eight hours. The urine found in the bladder amounted to 10 c.c.; it

was devoid of albumen and gave the reaction of iodine.

FOURTH EXPERIMENT.

A dog of middle size. The bladder having been emptied the spinal medulla was cut between the seventh cervical and the first dorsal vertebræ. The animal showed paralysis of the posterior limbs, though he moved the anterior, but could not stand erect on them. The solution of the iodide of potassium was immediately injected under the skin. The animal was placed in the usual cage, for collection of the urine emitted. He lived about six hours. He discharged about 50 c.c. of urine, of an amber yellow color, turbid, devoid of albumen, but giving the iodine reaction.

Forty other centimeters of urine were found in the bladder, having the same character as that emitted. When the spinal medulla was exposed at the point of the lesion, it was seen that the section was not complete, a group of the fibres of the left lateral cord remained uninjured. There was, therefore, as the result of this experiment, an abundance of urine without albumen (polyuria without albuminuria).

FIFTH EXPERIMENT.

As the preceding experiment left doubt whether the incomplete section of the spinal medulla had influenced the obtained result, I decided to repeat it on another dog of the same size. The spinal medulla was cut between the seventh cervical and the first dorsal vertebræ, and the bladder being emptied, the solution of the iodide of potassium was injected under the skin. After six hours the animal was killed by wound of the heart. He had discharged 30 c.c. of urine, and eighty more were found in the bladder. It was found devoid of albumen, and it gave the iodic reaction. At the autopsy the section of the medulla was found complete.

This time, also, section of the spinal medulla between

the seventh cervical and the first dorsal vertebræ produced polyuria without albuminuria.

SIXTH EXPERIMENT.

On a small dog the spinal medulla was cut in correspondence with the sixth cervical vertebra. The bladder having been previously emptied, the solution of iodide of potassium was injected under the skin.

After five hours there was found in the receiver under his cage about 10 c.c. of urine, turbid, and with alkaline reaction. There was abundance of albumen, which gave the well-known reaction of iodine. We found in the bladder 10 c.c. more of urine, which presented the same characters.

The alkalinity of the urine has its counterpart in the observations of Stanley, who found the urine of a man alkaline after traumatic lesions of the spinal medulla, an alkalinity attributed by Smith to decomposition of the urea before its entrance into the bladder.

SEVENTH EXPERIMENT.

A small dog. The spinal medulla was cut between the fourth and fifth cervical vertebræ. The bladder was emptied, and the solution of iodide of potassium was injected under the skin. He passed no urine. As after two hours he showed no signs of life, we opened the abdomen and took from the bladder about 15 c.c. of urine, which had alkaline reaction and was albuminous, and gave the reaction of iodine.

EIGHTH EXPERIMENT.

A little dog. The spinal medulla was cut between the third and fourth cervical vertebræ. Tracheotomy was previously executed, so that we might, by the tracheal tube and artificial respiration, keep the animal in life. The bladder was emptied by strong compression of the hypogastric region, and the usual solution of iodide of potassium was injected under the skin. About 100

c.c. of water was introduced into the stomach by a tube. Artificial respiration was kept up for two hours and a half. The animal passed no urine. About 3 c.c. of urine was found in the bladder; it did not give the iodine reaction, nor was any trace of albumen found in it.

NINTH EXPERIMENT.

On another small dog the same operative process was adopted as in the preceding experiment. Artificial respiration was kept up for about two hours. About 4 c.c. of urine was found in the bladder, without any trace of albumen, and it gave no reaction of iodine.

The result of these last two experiments left some doubts, either that the section of the cervical medulla between the third and fourth vertebræ arrested the urinary secretion, and that the 3 or 4 c.c. of urine found in the bladder had been there before the section of the medulla, as the pressure on the hypogastric region might not have been sufficient to evacuate the bladder; or that the 3 or 4 c.c. of urine found in it, had been secreted after the section of the medulla, and it did not show the action of the iodine because the lesion had arrested the process of absorption of the solution of the iodide of potassium injected under the skin.

In order to solve the problem I executed the following experiment, by which I wished to become certain of two facts, viz., that the bladder was completely empty at the moment the section was made, and that the absorption of the iodide was not arrested by the lesion.

TENTH EXPERIMENT.

A bitch of medium size. The spinal medulla was cut between the third and fourth cervical vertebræ. In order to empty the bladder totally, a small opening was made in the hypogastrium, in the median line, in such a manner as to admit a finger, by which the bladder was directly compressed. The solution of iodide of potassium was injected under the skin and about 100 c.c. of water

was introduced by the mouth into the stomach of the animal. Being operated on by tracheotomy, she was kept in life by artificial respiration; during which, by pushing a long needle into the cardiac region, it was discovered that the force of the heart was sufficiently good (pulse ninety per minute).

After two hours and a half she was killed by cutting the carotid, and part of the escaping blood was taken. She emitted no urine. The bladder was found empty, contracted on itself. The blood extracted from the carotid coagulated, and its serum showed very distinctly the reaction of iodine. It was therefore clearly proved that the secretion of the urine was suspended, but absorption of the iodide of potassium had taken place, as wa demonstrated to us by analysis of the blood.

From the result of this experiment and of the two preceding it, we are authorized to conclude that section of the medulla between the third and fourth vertebræ arrests the urinary secretion.

ELEVENTH EXPERIMENT.

In this experiment I wished to study the effects produced by electric excitation of the spinal medulla on the secretion of urine. I was unable to avail myself, for this purpose, of the experimental method adopted in my previous experiments, because it was necessary to see the instantaneous effects produced on the renal action when the excitation reached the spinal medulla. I therefore had recourse to the fistula of the ureter.

On a chloroformed dog I exposed the spinal medulla at the fourth cervical vertebra, and I made the fistula in the left ureter. The quantity of urine that came in drops, in ten minutes, was I c.c. As the animal was yet under the chloroform narcosis, I excited directly the spinal medulla at the exposed point, with an induced current of weak force (the slit of DuBois Reymond), and I saw the flow of urine cease. Four minutes after cessation of the excitation the dripping of urine recommenced,

and it gradually returned to the normal quantity. This experiment was several times repeated with the same result.

From the experiments detailed, I think the following conclusions may be drawn:

1st. Lesions of the spinal medulla, from the first dorsal vertebra downwards, do not cause changes in the renal function.

2nd. Section of the spinal medulla, between the seventh cervical vertebra and the first dorsal, produce polyuria, an experimental result which may be compared to that obtained by Bernard and Vulpian, after section of the great splanchnic, and by Eckhard after section of the renal plexus, excepting that in the experiments of Bernard and Vulpian, there was, along with the polyuria, albuminuria.

3rd. After section of the spinal medulla at the sixth, fifth, or fourth cervical vertebra, the secretion of urine continues, and shows more or less albumen. This result may be compared with that which was observed by Brachet, Muller and Peipers, after lesions of the renal nerves, excepting that in the last there was also hæmaturia.

4th. Section of the spinal medulla, between the third and fourth cervical vertebræ, arrests the urinary secretion. This result may be comparable with that obtained by Pineus, who, contrary to Eckhard, saw the secretion of urine cease after section of the renal plexus.

5th. Electric excitation of the spinal medulla in the cervical region arrests the secretion of urine. This result finds its counterpart in the experiments of Grützner, who, by exciting the inferior extremity of the spinal medulla, saw the secretion of urine arrested and the renal tissue becoming pale; also in the similar results obtained by Bernard and Vulpian, after galvanization of the renal nerves, and in those which I obtained by the electric excitation of the renal organ itself.

Pfluger, on galvanizing the spinal medulla, saw the

calibre of the corresponding arteries diminish; and Ludwig and Thiry observed in curarised animals, in which the pneumogastrics and sympathetics were cut, that the electric excitation of a section of the spinal medulla, at the level of the atlas, produced restriction of all the branches of the aorta, a restriction especially sensible in the renal arteries.

To what cause are to be attributed the changes in the urinary secretion, which, in our experiments, were met with after lesions of the spinal medulla between the fourth cervical and first dorsal vertebræ, and the arrest of the secretion after section of the cervical medulla between the third and fourth vertebræ?

I do not think that it suffices for the explanation of these phenomena, to appeal to the lowering of the blood-pressure, because, although section of the cervical medulla may be accompanied by a marked diminution of the blood-pressure, I do not think this is sufficient to cause complete cessation of the urinary secretion, after section of the cervical medulla, between the third and fourth vertebræ. (See experiments eight, nine and ten.)

I have stated, in the first chapter of this work, that dependence of the urinary secretion on the pressure of the blood, could not be established, and that throughout great variations of this pressure, the renal activity remains unaltered. Goll also admits that, not only is the secretion of urine neither increased nor diminished, according to the increased or diminished pressure of the blood, but that precisely the contrary often happens. Ustimowitsch also came afterwards to this conclusion, and made the renal secretion depend on the pressure of the components of urine in the blood, rather than on the blood-pressure.

Again, to what cause is due the lowering of the blood-pressure after section of the spinal medulla? It is due to paralysis of the vasomotor nerves, in consequence of which there is extended vaso-peripheral dilatation, and hence diminution of tension. Similar effects result from

lesion of the vasomotor-sympathetics, excepting that by reason of the multiplicity of these centres, the action is more localized. And so from section of the splanchnic nerves which innervate the mass of the abdominal viscera, the blood flows in greater quantity in the arteries of this region, after dilatation of these vessels. There should be then a diminution of blood-pressure in the abdominal organs and in the renal organs this diminution ought to bring effects similar to those from section of the medulla, that is, a slowing of the action of the kidneys. Instead of this the very contrary, as we have seen, is the fact; as shown by the experimental results of Bernard and Vulpian, who, after section of the splanchnics, obtained a most notable increase of the quantity of urine.

Excitation of the spinal medulla produces increased tension of the blood; but instead of a corresponding increase of the quantity of urine, we have experimentally seen the cessation of the urinary secretion throughout all the time that the excitation lasted. (Experiment II.)

Being then unable to attach much value to the changes of blood-pressure, it is probable that the alterations of the urinary secretion, observed after section of the cervical medulla, are due to lesion of the special nerve fasces governing the function of the kidneys. The existence of these special nerve paths in the cervical medulla, putting in communication the medulla oblongata with the renal organ, admitted primarily by Eckhard, and denied by other experimenters, may, perhaps, be confirmed by the results of my researches.

INFLUENCE OF THE BRAIN ON THE RENAL FUNCTION.

That the brain is not an organ necessary to the performance of the renal function, we have seen before by means of the researches of Krimer and Bidder. The urinary secretion may, under its influence, undergo various modifications. The fact of trifling and frequent micturitions, under mental apprehensions, is well known.

Professor Beneck made the observation that, after

strong moral excitements, the quantity of urine was increased from 60 c.c. per hour to 200 c.c. In consequence of great terror, and under some nervous attacks, the urine is frequently seen to be surprisingly watery.

Mosso, by making experiments on some soldiers, with respect to the exchange of the material of the organism, under the influence of fatigue, on a day of rest, in which the men had been engaged in sports in which they took such interest as to raise them into a state of high excitement, their urine was increased to an extraordinary extent.

I might multiply these facts, but it is necessary to distinguish whether the influence of the brain has relation to the secretion of the urine, or to its elimination.

Bochefontaine demonstrated that by causing a faradic current to pass over the anterior cerebral convolutions in a curarised dog, completely anæsthetic under chloral hydrate, the animal was seen to urinate more or less abundantly. He concluded that the micturition was the immediate result of the contractions of the bladder, which was distended by the urine in a greater or less degree, and not at all dependent on a larger secretion of urine. In fact, on cutting the ureter and inserting in it a tube, he did not, on faradization of the brain, observe any increase in the flow of urine.

I decided to repeat the experiments of Bochefontaine on some dogs. I trephined the anterior part of the cranium, in correspondence with the anterior lobes, without curarising the dogs. A ureter was then laid bare and cut, and a small silver tube was introduced into it and was fixed to the exterior of the abdominal wall.

Having ascertained the quantity of urine which in a given lapse of time came from the fistula of the ureter, the variously exposed points of the brain were electrically excited, and we saw the quantity of urine, which under the excitation, came from the fistula in the same time. I now report a few of the experiments made, which resemble the others.

FIRST EXPERIMENT.

A dog of medium size. The cranium was trephined on the left parietal region, in relation with the crucial sulcus. A fistula was made in the right ureter. The normal quantity of urine which came in 10 m. was I c.c. On exciting the exposed part of the brain with the rheophores of an induced current the animal was seized with epileptiform convulsions. The flow of urine did not stop, but there was a notable decrease of it, that is, to I c.c. in twenty minutes.

After the animal became quiet, the same point of the brain was excited with the induced current of the same intensity; there resulted muscular contractions only, and the same effect as before on the urinary secretion. The results obtained, by using the current proceeding from ten small elements of Daniell, were identical; there were, however, no convulsions, but muscular contractions alone.

SECOND EXPERIMENT.

An old dog. The brain was laid bare in the left parietal region, with an ordinary trephine, in correspondence with the crucial sulcus. A fistula was made in the left ureter. The quantity of urine which came in drops from the ureter, in ten minutes, was I c.c. On exciting the brain at the uncovered part, with the rheophores of an induced current of medium intensity (slit of DuBois Reymond), the urine came in the quantity of 0.5 (½) c.c. in ten minutes.

The experimental data collected by us lead us to form the following conclusions:

Electrization of the cerebral gray substance on the anterior lobes, not only does not produce an overaction augmenting the secretion of urine, but though it does not stop the secretion of urine, it causes a more or less notable diminution of the quantity.

The instances of increased quantity of urine observed after strong emotions and lively psychical excitements,

cannot, probaby, be attributed to any other cause than a transient paralysis of the vasomotor nerves.

Many disturbances of micturition which happen under mental apprehensions are caused by contraction of the bladder, as has been accurately demonstrated by the experimental studies of Mosso and Pellaconi, since the researches of Valentine and Budge.

The researches relative to the influence of cerebral action on the chemical composition of the urine are not less interesting.

Quineke found a notable difference in the urine of some persons, subjected by him to experiment, according as they slept or kept awake in bed. He, however, hesitated to assign the cause. Byasson found the influence of cerebral action on the physiological components of urine, so remarkable, as to lead him to assert, that if the urine of a person who had dieted alike for three days, and continued in the same sensible external conditions, be set apart distinctively, it would be possible to know, by analysis, what sample was discharged during repose, during cerebral activity, or during muscular exercise.

Brain exercise, properly so called, alias thinking, is accompanied by an increased elimination of urea in the urine, and of phosphates and alkaline sulphates. Muscular exertion is accompanied by a more than usual elimination of urea in the urine, and uric acid and chloride of sodium.

Raspahoff found conflicting results in relation to the influence of intellectual labor on the elimination of azote and phosphoric acid. In some individuals experimented on by him, he noticed a diminution of azote and sulphuric acid, but in others the opposite.

There are substances which influence the urinary system by producing changes of the quantity of urine, or which affect the elements of retrograde metamorphosis that are contained in it. This influence results from their action on the nervous centres, especially the brain. The sensible increase of the urinary secretion after drink-

ing the ordinary infusion of roasted coffee is well known. According to the observations of Hoppe, Boecker and Rabuteau, the organic changes under the action of coffee, would be slowed, and hence it has been said that coffee is not only a pleasing beverage, but also a nutritive agent. It has been said that persons who drink much coffee have no need of so much nourishment as otherwise they would have, and that under its influence the quantity of urea eliminated is lessened.

On the other side, the observances of Fredrichs, Lehman and Roux, have shown that after the use of coffee and caffeine there is an increase of urea in the urine. Voit, after pointing out the defects in the observances of Hoppe and Rabuteau, demonstrated, by researches made on dogs, that coffee quickens the organic changes, instead of retarding them, and augments the quantity of the urea in the urine.

Fubini afterwards took up the question, making experiments on men, with the ordinary infusion of coffee and with caffeine, and he was able to show an increase of urea under the action of both.

This fact, being in accord with the action of coffee in promoting intellective activity, caused the attribution to this substance of the property of exciting pleasantly the nervous system—an excitement which has as its result the quickening of the organic combustion, and, hence, causing increase of urea in the urine.

The effects from tea are identical.

Among the other substances which bring in modifications of the urine, by their action on the brain, we note the preparations of opium, some of which increase and others diminish the quantity of urea in the urine.

Alcohol is one of the substances of which a moderate dose provokes a certain degree of diseases. Vulpian attributes the diuretic action of alcohol to an irritation which it produces in the anatomical elements of the kidneys which secrete the urine, an irritation which gives place to some vascular and secretory reflex actions, which

are effected by means of the vaso-dilator and secretory nerves of the kidneys.

Other investigators, on the contrary, think that the over-activity of the renal function, provoked by alcohol, is due to the action of this substance on the nervous centres, and especially on the brain.

The influence which alcohol also has on the composition of the urine is worthy of notice; in fact, according to the observations of Boecker, Hammond and Marvand, a diminution in the normal quantity of urea, is found after drinking this fluid.

Influence of the Sensible Nerves on the Renal Function.

After having studied what is the influence of psychical excitement on the secretion of urine, it appears to us advisable to enquire what may be the influence of excitement of the nerves of sensation on the renal function.

Vulpian tried to find whether electric excitation, bearing on the central cut-end of the sciatic nerve, induced, by means of reflex action, any effect on the kidney and its functional activity; but he did not find any modification, either of the circulation or secretion. This fact was contrary to what was observed several years ago by Fubini; that is, that a strong excitation acting on the forearm, with the bandage of Esmark had as its effect, the production of a notable diminution of the flow of saliva from the parotid gland, in a man on whom catheterism of Steno's duct was practiced.

With this view we have repeatedly experimented on dogs, on which a fistula in one of the ureters was made. One of the sciatics was strongly excited; the effect was suppression of the flow of urine from the ureter; but the flow returned when the excitation of the sensitive nerve was relinquished. The like results were obtained by exciting the sciatic of the side opposite to the fistula.

These observances, several times repeated, and with the same result, were realized, both in curarised dogs kept in life by artificial respiration, and in those not curarised.

The studies of Nepveu, which show that in diseases of the testicles, resulting from wounds or inflammation of the tunica vaginalis, or after the operation for hydrocele, there is often a notable decrease of the quantity of urine, on the second or third day after the operation, are in accord with our experiments; and these agree with the studies of Herzen and Fubini, which would exclude the existence of phrenic centres in the brain, whilst they demonstrate that strong excitements of the nervous centres and of the peripheral nerves may scrve to restrain the secretions, at least temporarily; a fact which would harmonize with the theory of Brown-Sequard, who does not think that there is any particular path for inhibition, but that, in the nervous system, the whole is in communication, as well for inhibition as for dynamization.

INFLUENCE OF THE PNEUMOGASTRIC NERVE ON RENAL FUNCTION.

Vulpian, having cut the two pneumogastric nerves in the neck of a dog, found in one of them, after some days, a nervous fibre which presented all the characters of the alterations which are presented in nerves that have been separated from their trophic centres. He therefore believed that some fibres of the renal plexus proceed from the pneumogastrics through the solar plexus. But the experiments devoted to the study of the influence of the pneumogastrics on the secretion of urine, have not given such results as to enable us positively to determine the physiological relations which exist between the vagi nerves and the kidneys.

The experimental results obtained by Claude Bernard and Vulpian differ. Bernard, on galvanizing the pneumogastrics in dogs, did not see any change in the renal circulation, and the secretion of urine remained in the normal state. But on galvanizing the pneumogastrics in rabbits, at the level of the heart, he saw the blood of the corresponding renal vein, resume the rosy tint, which it had lost by the previous section of the great splanchnic.

Vulpian, on repeating this experiment, was unable to obtain the results mentioned by Claude Bernard.

On this subject I, also, wished to contribute something experimental, with the object of being enabled to draw from the results of our physiological researches, some conclusions which might throw light on the but too obscure anatomical data.

I have therefore studied the influence of the vagi on the secretion of the kidneys, both by electric excitation and by section, in order to see, in the first place the modifications which occur in quantity, and in the second place, in the composition of the urine. I now relate the results of the experiments, to enable me to form afterwards the relative deductions.

FIRST EXPERIMENT.

A dog weighing seven and a half kilogrammes (about eighteen and three quarter pounds.)-A fistula was made in the right, in the way before described. The pneumogastric was laid bare in the neck, on the corresponding side. The quantity of normal urine coming forth in ten minutes, varied between twenty and twenty-six drops. On passing into the pneumogastric at the place indicated, an induced current of very low force (slit of DuBois Reymond, the piles Grenet, distance of rochettes 40 c.m.) the flow of urine was suspended through all the time the excitation was continued; but it recommenced in three minutes after the current was interrupted. The contractions of the heart continued during the electric excitation. By adopting a very strong excitation there is produced a suspension of the secretion of urine; but this fact may be closely connected with the suspension of the movements of the heart. I do not think it of any use to relate other experiments, which were almost constantly similar.

In another series of experiments I studied the modifi-

cations which took place in the urine, after section of the pneumogastric. The animals (dogs and rabbits) were for this purpose, shut up in proper lodgments, to enable us exactly to collect the urine discharged by them in twenty-four hours. The urine discharged in the days preceding, and in those following, the section of the vagi, was comparatively analyzed. The quantity of aliment given before and after the section was exactly the same. and of the same sort, Besides searching for albumen and sugar, we daily tested the quantity of urea and phosphoric acid; the former with the solution called the acid nitrate of mercury (Liebig's method), and the latter with the solution called acetate of uranium.

The results of our researches were the following:-In the dogs and rabbits, after section of the pneumogastrics in the neck, there was not, in the urine collected in twenty-four hours, any notable difference in the absolute quantity of urea and phosphoric acid; but the increase in the quantity of these substances, relative to the quantity of urine, was great.

The fact however is worthy of note, that though the urine was found to be free from albumen in the animals in the normal state, traces of albumen began to be almost constantly manifested in two or three days after the section of the pneumogastric-an important fact, which appears to stand related to the degeneration of some fibres of the renal nerves, observed by Vulpian a few days after section of the vagi.

These experimental researches have led us to believe that there really exist in the pneumogastrics, some nerve fibres, which, through the intermediance of the solar plexus enter, and take part in, the renal nerves, and influence the secretion of urine.

INFLUENCE OF DISEASES OF THE NERVOUS SYSTEM ON THE SECRETION OF URINE.

As neuropathology may, in many cases, serve as a useful auxiliary to the physiology of the nervous system, I have deemed it befitting here to bring together some observations, found scattered in science, on the changes observed in the urine after lesions of the nervous system.

In cerebral diseases, properly so called, in psychical disorders, spinal diseases, affections characterized by motor disorders, such as tetanus, epilepsy, chorea, and paralysis agitans, changes have been signalized both in the quantity and the quality of the physiological components of the urine.

Thus Addison recognized decreased normal proportions of the chloride of sodium, the sulphates, and urea, in psychical diseases and in cases of mania.

Burral, on the other hand, found in hypochondriacs an increase of urea; Ollivier, Charcot and Bouchard found the like increase after cerebral hemorrhage.

Lombroso saw an increase of phosphoric acid in maniacs, during the period of agitation; but a decrease in melancholics and tranquil-maniacs, and no change in dements and idiots.

Mendel found less elimination of phosphoric acid in chronic cerebral diseases, also in accesses of agitation, whilst he saw increase of phosphoric acid after fits of apoplexy and epilepsy.

Mairet, in examining the proportion of the alkaline phosphates and the earthy alkalines, found in the forms of psychical alienation connected with high cerebral activity, an increase of the earthy alkaline phospates.

Marro found the quantity of the phosphates less in melancholics, and in lypemania he found a decrease of the alkaline phosphates with the presence of fatty and volatile acids, and abundance of earthy phosphates, especially the phosphate of lime. He noted the constant presence of formic acid and acetic, in anxious melancholy, but in the other forms he met with only acetic acid, or carbonic.

Rabow, in almost all cases of melancholy and psychical depression, found a considerable decrease of the quantity of urine discharged in twenty-four hours, with greater specific weight, diminution of urea, and, above all, of the chlorides. In circular insanity he saw the urea and chlorides increase in proportion as the state of depression passed off.

In progressive paralysis (paresis) of the insane, in the first stage, that is whilst intelligence remains, he observed increase of the quantity of urine, with relative increase of the urea and the chlorides; but with the advancing dementia he observed decrease of the quantity of urine, and also of the absolute quantity of urea and the chlorides, and a rise in the specific weight. The same author having examined the urine of ten epileptics immediately after the fits, never found sugar, but in eight he found albumen, as Huppert had before indicated. In idiots he observed that the quantity of urea and of chlorides was not in relation with the quantity of the ingested aliments.

Testi, in four cases of cerebral commotion observed retention of urine, and a neutral reaction of it.

Lepiri and Jacquin, in epileptics, after the fits, found the quantity of phosphoric acid increased.

The anuria of hysterical persons is well worthy of note.

In chorea, in proportion as the patients advance towards recovery, the quantity of the substances excreted in the urine by the kidneys, diminishes (Jones).

Senator saw, in traumatic tetanus, neither an increase of uric acid nor of urea; hence he concluded that the quantity of urea is independent of the spasms.

In paralysis agitans, Chérou found an increase of the phosphates, whilst the urea, the chloride of sodium and the sulphates underwent no modifications.

In persons affected with the disease of Parkinson this increase of the phosphates was observed by Laporte. The analysis of the urine made by Saint Léger, in this disease, did not give the slightest increase of the daily excretion of phosphoric acid.

Stanley found the urine of a man alkaline, after traumatic lesions of the spinal cord; and Bellingeri observed,

in inflammation of the cord and its membranes, turbidness of the urine from precipitation of phosphates.

Audry, in an individual affected with progressive muscular atrophy, frequently observed the presence of albumen—the albumen of the subjects of myelitis, which has its counterpart in the experimental form produced by Schiff and Correnti by irritation of the medulla.

Vaudin, in analyzing the urine of a patient who had an affection of the spinal cord, observed free hydro-sulphuric acid, a fact which had been observed by Neubauer also.

In hydrophobia glucose was found in the urine by Colosanti.

From these few citations, which might very easily be multiplied, we may see how various are the changes of the urine in the different morbid processes of the cerebrospinal axis. The facts, however, which have hitherto been collected, and the researches which have been instituted, can hardly lead us to well-determined conclusions, because it has not always been established what part of the chemical modification of the urine pertained to the pathological process, and what part to the complication of other morbid facts. Thus only can we explain the contradictory results which, in the disease of Parkinson, were obtained by different observers; some of whom found increase, and others decrease of the phosphates.

It is to be hoped that ulterior researches, instituted in a more rigorous experimental method, may furnish us with a concordance of positive results, so as to enable Neuropathology also to bring a valuable contribution to the physiology of the nervous system, in relation to the influence which it exercises over the urinary system.

Over-strain and Under-power of Brain.*

A CURSORY SURVEY FOR LAY READERS ESPECIALLY, OF THE INTER-RELATION OF PSYCHICAL DEMAND AND PHYSICAL SUPPLY.

By C. H. Hughes, M. D., St. Louis, Mo.

In the days of our ancestors when our grandfathers, and perhaps even the fathers of some of us, obtained their education mainly during the invigorating days of winter, when the season was unpropitious for the plough, and their school-houses were built of materials which their own hard hands had hewn from the forest, over mental strain from too much study was but a mythical possibility, and under-power was one of those fabulous gods of the imagination for which their incredulous heads and hands provided no Pantheon. Their organisms were hardened and strengthened to their surroundings by ample sunlight and fresh air, pure, plain food (well relished), timely and undepressing recreation, and ample rest after each day's work for mind and body.

Luxury did not lurk in the backless seats of the average district log school-house of those early days, with its wide open fireplace and its walls chinked with mud, which mischievous boys often picked out to further ventilate the school-room.

From these primitive school-houses the scholar often went home hungry, for he not only studied his books but helped to cut the wood and make the fire that kept him warm, and to sweep the school-room, but he seldom went home with the headache of a vitiated atmosphere or the pangs of a nervous dyspepsia.

Our fathers were men of power. Our mothers too

^{*} This essay on mental hygiene is in substance the author's lecture before the Alumni of Mary Institute, St. Louis. It is here presented as a cursory summary of facts for the government of brain-rest, repair and action, which have their warrant in the facts of science—physiological, psychical and physical—so written as to be read with appreciation, it is hoped, by a not insignificant number of readers of the ALIENIST who are engaged in the exalted vocation of education—the highest calling, properly pursued, in a civilized nation.

were like them; at least the mothers and fathers of those of us who have survived to maturity with reasonably good constitutions, the ordeals of school and social life in our large cities.

Like their brawny arms were our fathers' brains. They rejoiced in surplus of power. Over brain-strain from over-study was to them a stranger and a myth.

Conscious of strength which had never been overtaxed, they had but to dare in order to do, and they had that pluck to undertake great enterprises which comes of conscious power. They realized no finite impossibilities to mind.

The *ennui* of sedentary vocations and constant in-door occupations seldom troubled them.

Compelled to be physically more reliant than the men of our time, and living of necessity more in accordance with the just demands of nature, they bequeathed to their children plucky maxims in regard to the capabilities of mind, beyond our power of successful execution under our changed environment.

To them all things were possible to mind, because they had not realized, as many of their descendants have, how feeble the mental powers are, without a strong brain and body to support them. Mens sana in corpore sano had no such realistic meaning to our fathers as has been forced upon us. True, the possibilities of the human mind are as yet immeasurable and may reach, for all we know to the contrary, to the very mind of the Infinite; but these possibilities are only possible to us through a more circumspect and less prodigal use of all our powers than our ancestors displayed. We must save ourselves for our brains, and save our brains for our mind's sake.

The morning newspaper did not come each day to our fathers before they sat down to breakfast, to make its early demand upon the organic neural force and abstract power which, in some organisms, should all go to the stomach at that time of day.

Our fathers went to bed with the set of sun, or, if the dim tallow-dip or fagot-light prolonged their hours of vigilance, no brilliant gas or dazzling electric light could then, as now, make sleep a stranger to their eyes till the return of the next morning's sun, or if, perchance, they fell asleep, as indeed they scarce could help, even with the weightiest matters of their day on their minds, under the unstimulating household lights of their times, no telephone aroused them from their peaceful slumbers and no dreams of Wall Street ventures (of bulls or bears or fluctuating stocks of any kind) startled them into premature unrest before the break of day. The terrors of Wall Street insomnia haunted not their tranquil sleep, nor did the "ticker" and the phonograph combine to wear them out by day.

The news of the whole world did not come to them as it comes to us now in a single day, to keep their braincells in ceaseless activity, only to end in sudden stoppage of the heart through an inadequately-rested, constantly overtaxed and finally paralyzed nervous mechanism, failing first in cortex or base of brain; or a weakened and broken brain-vessel or blood-clot detached from the walls of a feeble, enervated heart, and lodging in the brain so as to stop as quickly as the click of a heart-valve the machinery of thought and motion, just as a particle of dirt within its machinery stops the movements of our watches. Railroads did not rob time of its diurnal periods of rest in their day, the crossing of the Atlantic within a week or circuit of the world in a few months were not possibilities of their time.

Our fathers did not sleep on the go and go in their sleep as we do. The typical fifteen minutes for refreshments was unknown to them, and at home they took time to rest in going to and from their meals and places of business, because they went in their own conveyances or on foot instead of the cable or elevated rail car or the steam coach, and they were not striving after an electric motor to jostle their digestions and help them to go

faster through the world. In short, environments then imposed conditions of rest from too constant brain-strain, which were in accord with the demands of nature; they ate and slept and rested like their horses; eating temperately of plain food in the daytime, and retiring physically wearied by honest toil at night.

Our fathers lacked, and they did not require, the wisdom of self-care, that we must have in order to survive, if duty's demands in our time are answered.

With all the added stimulants to over-mental activity about us, which did not press upon our fathers, it is a possibility and a certainty (unless we are wiser than they were) for us to run our race much more swiftly and perish sooner than they could have done under the mental pressure of their time. Their environments conserved their powers, ours tend to destroy. The necessities of existence imposed upon them more personal physical effort. They did largely a divided mental and physical work, and they could not if they would, so readily run all night and scarcely note the fleeting hours as we can. We have reached a time when, in view of the many influences about us tending to accelerate our mental movements, it seems far less figuratively than heretofore, to be but a step from the cradle to the grave. Most of us are willing and are probably anxious to go to heaven when we die, but most of us, I think, want to keep out of the grave as long as we can.

Over-pressure is the power which bears us there. How may we have the power to resist this pressure to the farthest natural extent? The problem of life is in this question, and the problem of health upon which depends the power of body and mind is involved in it likewise.

Health depends upon organic power and organic power depends on health. The wider and deeper the view we take, the farther and clearer we see that the question of over mental pressure is a relative one to organic power. It is a question of the relation of mind to organism and its environment, and upon its correct solution in the light of all that we have learned or may yet know of the functions and laws of mind and its subservient or governing organism, the brain, allied nervous system and whole physical body, will depend our capacity to so care for the mind, under all the pressure it may be called upon to sustain, that it may not fail through under-sustaining power. For whatever may be the real nature of mind, which thus far no eye has seen or glass has reached, it is so intimately allied to organism as to be practically inseparable from it in life. A blow upon the head may derange its manifestations for life, a subtile poison like alcohol or opium or hashish introduced into the blood which circulates through the brain may temporarily change or permanently destroy the mind's identity.

An inhalation, as of protoxide of nitrogen, amyl-nitrite or ozone, ether, chloroform or carbon-dioxide may exalt, depress, pervert, or suspend the mind's functions. An obstructed vessel, a tumor's pressure or a blow on one part of the brain, may suspend the memory of facts or of words, or of time or power of speech alone, without loss of words, or arrest, alter or destroy the perceptive powers, without always deranging the reasoning faculties or destroy or cripple special or general power of motion, leaving the intellect intact.

Ferrier, the great neurophysiologist, of England, with insulated electric needle placed, now on one convolution and now on another, of a monkey's brain and causing the monkey to make, at his master's bidding, chattering noise or execute prehensile, walking, climbing or other movements of the muscles of the body; touching certain centers of the brain surface and making the monkey's face to express surprise or fear and other varieties of facial expression of mental states, together with the physiologically demonstrated selective affinities of certain drugs for special parts of the brain and spinal cord, illustrates what science has done to show

how wonderfully like a marvelous machine of man's making the mental machinery is, and the same experiments show that this finely-adjusted mechanism, more delicate apparently than that of the most perfect and complex mechanisms of Geneva or Elgin by which we time our heart-beats and count the fast-falling footsteps through the little span of time allowed us for our life-work here, is far more difficult to derange than any mechanism of man's contrivance that ever approaches it ever so distantly in delicacy and complexity and perfection of movement. The nature of the human organism in its finest parts is hardy and adapted to endurance, capable of withstanding great abuse and violence from without and self-inflicted damage from within, and of repairing great injuries if allowed a reasonable chance. Its power of self-repair, which we call recuperation, or the act of recovering lost power or the vis medicatrix naturæ of Medicine distinguishes it markedly from all mechanisms of man's making. But, like the machinery of human workmanship, it is best repaired at rest. If given the same attention to its physical needs as the engineer gives to the proper working condition of the machinery that carries us fifty miles an hour through space, it would work with equal accuracy through its alloted period of time and carry us less suddenly than both now do, into eternity.

We live in a social and business atmosphere of excitement, and our physical environments are rather stimulating than restorative.

We make provision for action, always action, in our social, political and educational organizations, and reform and progress and never rest are our constant watchwords; and yet our frame is so constituted that adequate rest is one of its chief organic needs and essential preliminaries to progress. "Tired nature's sweet restorer, balmy sleep," is not courted as she ought to be. "Sleep! balm of hurt minds! nature's second course! sore labor's bath! Sleep, that knits up the raveled sleeve of care" and

compensates the waste and wear and worry of our mental life, is too much ignored in all of our arrangements for work of mind. Our amusements and recreations too, are mainly provided for during hours which were best devoted to rest and sleep.

To us the night cometh not now, as in the ancient days, when no man can work; night with us, when the brain ought to be at rest, has become the chief time of action. At that part of the day when the heart-throbs should be lessened and the over-taxed organ allowed a little repose between its beats, its pulsations are accelerated to meet the imperative calls for blood, of an unresting and unrestful brain whose ideational cells and percipient centers, are kept in ceaseless activity by the demands of late school work, midnight committee meetings of merchants, manufacturers, manipulators of markets and managers of "the machine" of party politics. To these we add the neural prod and whip and spur of artificial alcoholic (and even tea and coffee) stimulation at the wrong time of day, when an inclination to repose and not overaction of the nervous system and mind should be encouraged.

The man or woman who, in this age of demand for action, sleeps and feeds inadequately and works on, is destined to break down or die prematurely; and if the demand of tired nature for repose and repair be unwisely and cruelly answered, as, alas, it too often is in our time! by the goad of artificial stimulation, the end comes suddenly in those startling brain breaks which now too often abruptly sadden hearths and homes that might have had happiness for years had wiser self-management prevailed in the household head and beyond the homestead; but in this great world of action the light of great actors on the world's stage goes out as suddenly as a shut-off gas jet. Great mental suns are eclipsed in the twinkling of an eye, and while it ought yet to be day to them, from neglect of such precautions and care of self as the Humane Society

exacts for our horses.

Within a few short years the land has been draped in mourning for an ex-president and greatest general of the age, dead from over mental strain, because he knew not how to rest his brain at a time of life when nature demanded more repose than he gave it. It is said that he died of cancer, but before the cancer was the shock of Wall Street and its financial disgrace and irreparable reverse of fortune, just as before the cancer that killed Napoleon at St. Helena was Josephine divorced, Europe lost! over which the star of his brilliant, restless, wicked destiny, had but lately shone as if it might never set in the dark and overbearing retrospective anguish of his exile.

The nation scarcely gets over its mourning for a great general whose name during the late war was as familiar as the Potomac, dead too soon for lack of rest, and another who in his life was as brave as the bravest of Gettysburg and who will be remembered till the history of Southern reconstruction shall be forgotten, whose physique gave promise of a longer lease of life, before another brave military chieftain prematurely falls and a vice-president drops dead suddenly, because his heart nerves descending from the head and upper part of the spinal cord were deprived by ceaseless activity of that power which comes from adequate rest, to keep the heart going. He heeded not the warning of a previous brain-failure which demanded judicious rest as the condition of subsequent moderate integrity of function.

The life of a late actor of great promise and power goes out in mental fatuity and general paralysis from self-preventible causes, associated with physical unrest. Another swoons, but not in play upon the stage, of heart-failure, beginning in his head. And I might name here another who might yet have charmed the world for a quarter of a century with his inimitable personations, whose doom is sealed by alcoholic over-pressure added to the sustainable strain of his avocation.

The ruin of the histrionic profession is in the unrest and vicious indulgences that additionally exhaust the brain

of its members in the intervals between the plays, when nature cries for rest and recuperation of power. And I may add, this is the chief sin and reproach which attaches to the modern legitimate drama, as it is called.

One of the greatest financiers of the present day drops dead of heart-failure, due to over brain and nerve-strain, during a business conversation. Killed by his own hand, snapped out by his own imprudence at a time of life when his father had only begun some of his most successful financial manipulations in the monetary world. He had not a consititution hardened to mental endurance like that which the rigid environments of his father's youth had made for him.

Another scion of a greater ancestor, inheriting millions of money and the presidency of a great trunk line, now lies mentally prostrate, at a time of life when the father, like the great Vanderbilt, was just in the zenith of his power.

Two prominent and powerful pulpits of our city were but lately draped in mourning and congregations grieving and would not be comforted because of loved ones taken from them by a sudden apoplexia; and these two dire calamities might, by timely and judicious rest of their sad victims have been averted.

The lesson of those sudden break-downs is obvious. They are nature's violent penalties—her capital punishments for over brain pressure and neglected rest. If epitaphs always gave the causes of death those upon the tombstones of most of our great men of the present age would read something like this:

- "Dead because of resisted or neglected sleep."
- "He stimulated when he ought to have slept."
- "He fell prematurely because he never rested when he could help it."
 - "While he lived he was always wide awake."
 - "He never waited for the next train."
- "He was ever on the go, and now he's gone before his time."
 - "He was always in a hurry and went away too soon."

- "He was a hustler in his day, and went away early."
- "His sun set while it was yet day."
- "Ambition broke him in his prime."

Not indeed that all use alcoholic stimulants, but by all the excitants of brain action man can devise, his poor brain breaks down when it ought to be in the very prime of power. There seems to be a sort of morbid pride, like the suicidal manias which sometimes sweep over the land, displaying itself in the wish of some of our best and hard-to-be-spared men, "to die in harness," like an over-driven horse. But what sense, to sensible people, is there in this foolish idea?

How much better to work longer, if a little slower, as in the course of nature we approach the grave, and finish up our work here without startling *denouement*, and more leisurely wrap the drapery of our couch about us and calmly die like one who lies tranquilly down to pleasant dreams.

Overwork over-strains and weakens the nervous mechanism which holds intact the circulation of the brain: the vasomotor system of nerves, as it is called, is more or less paralyzed, and congestion and abnormally quickened circulation of the brain results in insomnia with insanity and paralyses as consequences, especially the general paralysis of the insane, or paresis. Alcoholic stimulants act in a similar manner; or brittle changes, by earthy depositions in the strong elastic coats of the arteries, technically called atheromatous degeneration, take place in the vessels of the brain, with advancing age, as was probably the case of the late John B. Gough, whose impassioned oratorical climaxes and dramatic manner put upon the blood-vessels of his brain the extremest possible tension. He was too old for that style of oratory. Heartfailures (so-called) of our great men of large affairs are generally head-failures from over-pressure and under-power, the latter from lack of adequate daily recuperation, just as their dyspepsias are. How can heart or stomach prosper in such organisms when their cormorant brains, continually

demanding more nerve force and never resting, constantly rob these lower organs so intimately associated by nervous connections and dependent upon the brain for force?

Ceaseless mental activity after a time overtaxes the cerebro-spinal axis and sympathetic nervous system, the centers of power for intellection and for the propulsions of organic life. The gastric juice that dissolves the food taken into the stomach is diminished through defective nerve influence, in quality and quantity, and a slow or difficult digestion goes on in the stomach, though its source is in the head. Hogs never have dyspepsia and you may load the tranquil-minded laborer, who works willingly with his hands all day long, to the full and he will labor with his load, be it ever so large, to a successful completion of digestion. Dyspepsia is the badge of the brain-wearied and over-worn by the over-pressure of work or vigils hard to be borne and of the comparatively unrested.

The pneumogastric nerves and their sympathetic connections sustain the functions of heart and stomach, and in part, that of the lungs and liver, and when these lower organs begin to fail in brain-workers, nature is protesting, just as she does in the neuralgias, headaches, and slight disorders of sensation and motion which are the oft precursors of brain break-down. It is then time for the prudent to take warning and begin the work of restful repair. Let us care for our bodies as we would care for our houses and not live long in them with leaking roofs and cracked foundations, foul drains and damaged food supplies. No system of education or scheme of brain work is safe for the organism, that fails to provide for adequate recuperative rest; and successful schools should look to the manner in which recreation seasons are spent by pupils and see that the proper times of repose are not partly spent in exhausting activities that give under-power in lieu of physical restoration. We are too much and too long on our feet or in our chairs, and too little on our backs or recumbent; the upright position taxes the heart more than the recumbent. The heart is an accommodating and responsive organ; it beats fast or slow within certain limits according to the demand made upon it for blood by the brain. Ordinarily it beats seventy-two times to the minute when we are sitting in mental repose. If we get up and walk about or run, or if something greatly agitates our minds, its beats increase to eighty, ninety or more (rarely in a healthy person), to a hundred and twenty, which is ordinarily a fever pulse. Alcoholic stimulants have the same effect.

Eight hours out of every twenty-four should be devoted to recumbent repose, woman for obvious reasons requiring a little more than man, seven and a half to sleep and half of each day to rest, relaxation and recreation, sleep and meals; and sleep and rest should be mainly in the night-time, while the remaining twelve hours could then be given mainly to vigorous mental or physical work, which is more than the average work, mental or physical, which man now gets out of his organism under the present irregular, exacting and artificially stimulating methods. We have largely turned night into day and come to despise, because we are too sleepy to enjoy the early morning sun and the vigor in his rays. Some of us never see the novel sight of a sunrise, except during our vacations, when we get up late and we are shaken up earlier than is our wont. (I mention the shortcomings of our sex because gallantry forbids special reference to yours, but since Eve first misled Adam in paradise the hygienic as well as moral faux pas of the sexes have been about equal and mutual.)

You may point your own moral from our shortcomings and make your own application.

We shall not have lived in vain if we have served or shall serve as a warning to the gentler sex to beware of over-pressure and the causes that lead to under-power, to sustain the strain of life's mental and physical burdens. I do not say that we should in our habits of life go back to the back log and log cabin of our fathers or to the

spindle and distaff of our mothers. We could not do so if we would, for we have passed beyond that in the onward revolution of human progress, but I would bring back to our homes and habits of life, the health-giving influences and surroundings of those days, the quiet evenings, the early-to-bed and early-to-rise habits of the past, and substitute the eventide meditations and mental repose at night-time of the quieter past for the excitations which gas-lights and electric illuminators, telephones and palace sleeping cars make possible at the present time. Physically, at least, we live more uprightly than our fathers and mothers did, that is, we stay up later and longer every day. We are living upon the capital, physical and moral, which they have bequeathed to us. Are we adding anything to our inheritance? Others are to receive from us, or have received from us, as we have inherited from those who have preceded ourselves, to fight the battle of life and sustain its physical and moral duties. We are not yet permanently degenerated, we are simply over-pressed and over-strained, not beyond our possible capacity, but above our powers, unconserved. We have a lesson to learn which our ancestors did not have to study, because no such demands were on them as are on us-the lesson of how to provide for the highest possible degree of human endurance, and, notwithstanding, many shall fall by the wayside and in the battle's front from lack of the requisite knowledge timely gained, which is power to endure, we shall, as a race, learn and profit by the lesson, and the fittest will survive. We have not yet reached the beginning of the end of our career.

The glories of a brilliant future of unsurpassed grandeur in great and glorious achievements, opens on our view and awaits only the judicious training of our powers, and the conservation of our developing energies, before we and our children may take possession. The human organism is pliant and buoyant, and while unlike any other machine, it may set in motion forces of its own which can destroy it, it also, unlike all other machinery,

has a singular power of self-repair. We need take no pessimistic view of our mental future if we study how the organism conserves itself, and give it a fair chance while demanding the paying-out of its powers in education.

With all the strain which an advancing civilization imposes on our minds and bodies we have been enabled, through the improved methods of protection from the effects of physical exposure and the spread of epidemic diseases, to so nurse what is left of our physical heritage as to prolong the average duration of human life. The same progress made in the direction of developing organic power in the growing period of life, will save and prepare our children for deeds of mental endurance far beyond our own strength. This knowledge is indeed the highest kind of power, and this power is knowledge. Let the pride of our young men and women be in their strength of body and brain, to sustain the display of mental power in purity and beauty. This is the true moral æsthetics. The courage to successfully prosecute high ideals of mind and heart is sustained and assured by organic endurance and power. While it is possible for the machinery of the adult mind to work well twelve hours out of every twenty-four this amount of work is over-pressure to the average mental organism now, with the generally uninvigorating, if not positively depressing manner in which, at least, a part of the remaining hours are usually spent by brain-workers. This amount of work is not habitually possible under the drawbacks of improper food, dyspepsia, bad ventilation disregarded, late hours, the midnight club, the morning german, night stimulation and study, the dissipations generally of both moral and immoral living, unsuitable clothing and insufficiently sunned bodies. We should sun and air our bodies as we do our bed-clothing and bed-chambers. Human bodies and brains, like plants, need good soil, sunlight and fresh air, and a time of rest for perfect development and power. If we turn from ourselves to our children the factor of growth in them is to be considered

in addition. They are in the most active period of physical and mental life. Power for daily expenditure to supply the demands of education must be secured to them from their environments, and power to become in them latent in brain and bone and muscle, and every vital organ, for future expenditure, must be drawn from the soil about them, which is the air they breathe, the food they eat, the clothing they wear, the houses they live and rest in and the sun that shines upon them, the recreation they receive and the moral atmosphere that surrounds them. The pressure the matured organism sustains with impunity is over-pressure in the young, and if borne at all it will be sustained at the expense of development and a stunted and pigmy immaturity, which will bear the marks of over-pressure and under-power for life's demands to a premature grave. There is a transition period, too, from childhood to youth when the pressure of study should be especially light or taken off altogether. A long vacation from all over-straining study about the period of puberty is not lost in either boys or girls; but well repaid, in the end, in a physique that fits for the sustenance of far greater physical and mental strain, than if the unremitting pressure of school-life had been endured at this period. My own opinion is that to not letting up of school-pressure for a while at this period more than any other one thing besides, is due the lessened stature and physique of our graduates from the great academies compared with their parents generally. The gale that the sturdy oak in its prime withstands, and that breaks the old tree in its decadence, bends down and dwarfs or uproots the sapling. We should be careful not to bend too violently or too often the growing tree, lest we should interfere irreparably with its fullest development. It is fortunate for the human race that the young school sapling has been so well endowed by nature for resisting over-pressure, even at the expense of developing stature. Had it been otherwise, the human race, under the inconsiderate goading processes of modern educational methods, which have largely ignored the child's organism, and the manner in which it has been cared for both in and out of school, would have much more enfeebled it than it is now. Education has tended to draw out about all the reserved vitality that nature could supply the growing organisms of our children, leaving little surplus for exuberant physical growth.

Education should develop the organism. A student should quit school stronger in capacity for bodily as well as mental endurance than when he or she matriculated. This means a developed mind with power to sustain its severest demands. I do not mean that a student should have the muscles of an athlete or the agile powers of a gymnast, but the frame and physical powers should not be so deteriorated after the completion of an educational curriculum as to make physical expansion under circumstances demanding it, an impossibility. Muscular power should exist in kind if not in quantity. Responsive capacity to developing influences should not be destroyed in the organism by over mental pressure. True education of brain should develop both the motor and the psychical areas of the brain—the places where the power that governs and excites the physical movements of the body as well as the centers where the faculties of the mind and soul dwell and work.

The sanitary condition of our great cities, the healthfulness of the streets, in respect of sunlight and pure air our children play in, is of equal importance with the sanitation of the school-room, for if they cannot have the parks and fields for play-grounds they should play and romp in the streets.

It should be remembered, that whereas our remoter ancestors were largely an out-door people we are greatly an in-door people; even when we go abroad, from city to city, or State to State, or from our homes, on business or pleasure on the street or railroad cars. Those of us who in our childhood climbed great hills or walked long distances to school, find our children objecting to walks of half the distance, and thinking it a hardship if

they are not transported by horse power or machinery. The multiplication of conveniences of travel and mechanical substitutes for labor makes physical degeneracy easy and physical labor uncongenial to us and our children. Physical apathy is as much a vice to be shunned as those vicious indulgences of appetites that deprave organism and rob it of vital stamina. We need not seek to emulate Hercules or Heenan but we cannot have the highest capacity of brain-power associated in an absolutely incapable muscular system. The muscular system must be exercised, in every scheme of education, so at least as not to lose its capacity. The energetic man or woman who spends a reasonable time out of doors and ignores the too habitual and exclusive use of carriage, street car and elevator, will receive muscular exercise enough to maintain health, if the proper balance of physical and mental exertion has been maintained in the developing period of childhood, youth and early manhood or womanhood.

Dr. Hertel, health officer of Copenhagen, in his instructive studies of the sanitary condition of the school children of Denmark, found among a class of children well fed, clothed and housed from inclemency of weather, the following state of facts: His inquiries were begun at the close of the summer holidays, after the children had been well rested from the pressure of the preceding school term. During the holidays their appetites were generally good, but they lost appetite during the school season. Of 3,141 boys, sixty per cent. he regarded as healthy, thirty per cent. unhealthy. The remainder were not reported to him. On beginning school, seventy-four per cent. of the same boys were healthy, and eighteen per cent. sickly, but before one year's schooling had been given them, the percentage of sickly children had doubled. This is a fearful ratio of increase of ill-health to be set down to Denmark school-life and the seed of a vast harvest of confirmed valetudinarianism to be reaped by these innocents later on in life, when bodily and consequent mental health will be more valuable than minds early matured in the multiplication table or mimicking the really great in a robust knowledge of the belles lettres, arts and sciences; when all the educational acquisitions of a life-time would be willingly exchanged for a return of the lost health and vigor. No burden is so great to bear or so cruel to bequeath, as the knowledge which the education gives of the beauties and treasures of learning, if, with the bestowal of her gifts there dawns upon the mind the painful consciousness of physical incapacity to enjoy them and a paralysis of force which makes it impossible for the dissapointed victim of over mental strain to walk further in the enchanting paths of culture and the flowery fields of true refinement. To be weak here and now is to be miserable indeed. It were better the paradise had never been presented to our view, than that it should only be seen to reveal to us what we might, but now cannot, enjoy. In Copenhagen, Hertel found, that on entering school, one boy in every five was sickly, and after a year's attendance, one boy in three was more or less a physical failure. Suppose this vicious process of education goes on there with those boys' children and their children's children, what will finally be the fate of Denmark if the county schools pattern after, and do equally destructive work with the educational establishments of the city of Copenhagen?

"At a meeting of the Académie de Médecine, in 1887, M. Gustave Lagneau called further attention to the disastrous effects of the (surmenage intellectuet), or the intellectual strain, exercised on the youth of to-day, during the ten years they pass in the lycées. The examinations at the Ecole polytechnique, Ecole normale superieur, Ecole centrale, Ecole navale, require such a severe course of studies that the physical reaction is often very serious. MM. Ernest Martin, Béard, Charcot, and Henrot have found a considerable number of students belonging to these establishments affected with myopia, dyspepsia, phthisis, nervous exhaustion, followed in many cases by impaired intelligence. It has become an imperative necessity to recognize that the doubtful intellectual development effected by the present system, detracts from physical aptitudes; the fact that out of a thousand French conscripts, 460 were declared unfit for service, is significant. M Dujardin-Beaumetz, who is doctor at an école normale of young girls,

stated that a reform in the programme of the studies pursued in girls' schools was equally urgent. The prolonged hours of study, and the severe examinations are equally detrimental to body and mind. M. Dujardin-Beaumetz deplored the tendency of the present day to educate girls as teachers, who were often better fitted for other employments. The competition for the position of school teacher is something incredible. In Paris alone there are 4,171 girls provided with teacher's certificates who are in quest of the position, while only about 100 vacancies for this position occur during the year."—[Paris correspondent American Lancet, July, 1887.

The hours of daily work of these Copenhagen schoolboys varied from four to ten and a half, and one-third of them received, in addition, private tuition which materially lengthened the average. Some nine-year-old boys worked eleven hours a day. This is shameful. Such of them as may live to adult age, will find the eight-hour system of labor altogether too long for them. The girls' schools made a worse showing. Of 1,200 girls, fifty-three per cent. were healthy, and thirty-nine per cent. sickly, after one year of study, while on entering school only twelve per cent. were sickly, a healthier showing than that of the boys. At sixteen, sixty-one per cent. of girls were sickly; the girls had not time for out-door exercise, is recorded of them on their mothers' authority. What is true of school-girls in Denmark, is true here. Such girls find their way too soon, though unwillingly, to places like Bellefontaine and Calvary, and too soon, though usually less unwillingly, to the matrimonial altar. The facts are strikingly and painfully suggestive. The figures of mental and physical failure found in Denmark, can be more than duplicated in our own land. We are a faster people than the Danes. We have before us a picture of degeneracy in the young of a country whose people are not pressed upon as ours are. If the element of physical stamina necessary to sustain developing brain and mind, are not so strong in us as they were in our ancestors, and English and American as well as European school statistics sustain the fact, what must we do to be saved as a people, and what must we do to save our children? I have pointed out some of the paths that lead to restoration of that which we have lost and are losing. Shall you pursue them? I know, ladies, from your request for an address on over-pressure from one who has made the mind in its relations to organism almost a life-long study, that your minds have discerned the dangers, and that you are discerning enough to have discovered that our educational methods provide for the exercise and abstraction of mental force while they have too much neglected the building of the brain.

Our chief aim in our present defective methods of teaching and training has been to run the educational machine to our purpose, with little thought of keeping it in repair and increasing its power as well as speed. The remedy lies in looking more wisely after the balance of bodily waste and repair, the construction, reconstruction and substantial development of body and brain. This done well and we and our children may safely endure the increased pressure of the present and over-pressure will become a thing of the past.

Matter and force—physical and psychical, are inseparably united in nature, and what nature has wisely joined together, let us not attempt to put asunder. Though Heaven is our desired destiny, we must not forget that we are of the earth, earthy in our capacities and powers.

SELECTIONS.

PSYCHIATRY.

A Wonderful Post-Mortem.—Five years ago Professor Tebaldi, of the University of Padua, published a charming and very instructive little book, with the title Ragione e Pazzia (Reason and Madness). He was well qualified for the task, as he had well and long studied both his subjects. The following abstract from its pages (a portion of the concluding chapter), is translated for the Canada Lancet, by our esteemed friend and collaborator, Dr. Joseph Workman, of Toronto:

"Before parting with my reader," writes the kindhearted Professor of Psychiatry, "I would like to answer a question which is frequently heard by alienists: 'Do we find in the organic changes of our subjects any which may account for the numerous and varied forms of mental disorders? Is there a material structural alteration of the brain, which should explain the strange manifestations of

insanity?'

"The answer might be rather difficult, but I shall try to give it by relating a singular occurrence, which happened in a university of this world, or, if it should better please the reader, in the world of dreams, into

which I am pleased sometimes to wander.

"An old professor, whose hairs had become silvered in the study of insanity, and who was accustomed to long vigils whilst poring over questions of science, was one night overtaken by drowsiness; he placed his head against the back of his chair, and closed his eyes, to get a little repose. When he awoke he found on his table a letter; it showed no post-stamp, it was strangely addressed, a little in one direction and a little in another, partly in small characters and partly in large, with some hieroglyphics interposed; it was just one of those to which alienistic physicians are accustomed, and thus it read:

"'My dear and good Doctor:—A sentiment of profound gratitude, to which I am not a stranger, my respect for the untiring kindness which you lavish on your patients, and the desire to explain an occurrence which has caused

so much noise, have induced me to address to you this letter.

"'I know that the sedate and tranquil minds of the professors of this celebrated university, as well as of a few of the public authorities, have been much disturbed by the fact of the disappearance of the body of a woman from the School of Anatomy; here I am to explain the secret, and by so doing I hope to quiet the minds of all

those gentlemen.

"'You know who I am, and you will remember that, whilst I was your clinical guest, you made a world of enquiries in order to know me thoroughly. My genealogy was traced back to its most remote source, and it was discovered that I descended from a merry and thoughtless god. My features were studied as earnestly as those of a lover; my body was subjected to a thousand examinations and experiments, poked, punched and peered into in every part; convulsed by electricity when I was quiet; restrained in a camisole with long, closed sleeves, when I became too lively. My inward parts were no less annoyed, for I swallowed as many pills and decoctions as might have

terrified a hypochondriac.

"'At last I was one day believed to be dead, and I hoped now to have peace, but I was disappointed. I must, distinguished doctor, make to you, in strict confidence, a confession, without which you could not comprehend the mystery. You must not regard me as the equal of any of the other afflicted ones who have the good for. tune to be under your care; I am a privileged being. When I was yet in baby swathings, a genius came to my cradle and bestowed on me some whimsical caresses, and placing her hand on my tender forehead, she pronounced nearly these words, which have proved prophetic: "Live, dear child, as long as humanity shall endure, and every individual who shall look upon you, or shall touch the hem of your vestment, or possess a lock of your hair, shall derive something from you and transmit it to most distant generations. The spirit shall animate every several part of your body, so that, even when detached from all the others, it shall still have sense and consciousness, and by its own proper virtue it shall tend to reunite with them."

"'If, Doctor, you look closely into these words of obscure color, you will find something which was before known to you, as to the truth of the last part of them. Here I am now to prove the truth of them, by relating to

you, in length and breadth, all that happened to me whilst

I appeared to be dead.

when I felt the white sheet drawn over my face. A few hours afterwards two rough hands laid hold of my shoulders and two others of my feet; I was laid on a litter, and next placed on a long table, in a row with six or seven other bodies. Having once commenced the fiction it pleased me to go on with it, and I wished to see how it would end. They tied a string round my great toe, and attached the other end to a little bell, and I was left in that cold and silent company. I took care not to move a single member, lest somebody might come in. By and by I turned my head and peeped at those seven or eight faces, white and motionless, which were my neighbors; I gave a little smile, hardly enough to show my teeth.

"'Twenty-four hours passed, and then those two gentlemen returned, and with but little politeness they denuded me; they lifted me up and then let me drop into a box, but not without paying a compliment to my body, which, as a handsome female, I accepted with gratification, though I was obliged to appear dead. I was carried out of this place and I passed into the hands of a man who was still more rude than the first two. This fellow was the grave digger. With the assistance of another, he lifted me out of the box, raised me high up and let me plump down on a hard, cold stone table, that would have made any

creature shiver.

"'Now began a strange exhibition. All around, on the seats of an amphitheatre, were stretched a hundred young fellows, some of whom were near to me, and you dear, Professor, were among these, the others were higher up and more distant. Oh! how many eyes were fixed on my members, which I, through all my life had so modestly guarded, excepting on occasions in which I was rather indiscreet.

How many complimentary epigrams did I hear!

"'One long, lean gentleman, with a thin grey beard below the chin, and a pair of spectacles on his nose (he was very like you, Professor), and wearing a long, black, glossy cloak, came near where my head was placed on a wooden pillow. An iron hand squeezed my face and pressed it against the hard cushion; I then heard a very sharp blade running round my head, from which the hair was removed, and the skin was cut down to the bone. Next I heard the scalp leaving the skull with a sort of

rustle, very like that given by my silk dress when I used to

attire myself for a ball.

"'I did not feel the least pain, and I listened with curiosity to what the Professor was saying to one of those young students, who had come beside me, and from time to time rested his writing-board on my abdomen, with

very little respect, if I must tell the truth.

"'They now, with a saw, removed the upper half of the cranium. When the Professor uncovered the brain there was a general movement of curiosity; all eyes, armed with magnifying glasses, were turned to this organ, which, being very carefully raised out of its shell, was placed on a weighing scale; and when the Professor announced the weight of it, there was an exclamation of general astonishment, for it exceeded not only the average of that of the brain of woman, but even that ascribed to the brain of man. A shower of compliments was then bestowed on me from the benches of the school, and I was very near breaking into a laugh, but I choked it within my throat, because it would have scattered the whole gathering.

"'They now began to slice the brain, but I did not lose a bit of my consciousness or my finest senses. I heard the Professor at every cut uttering his remarks, which were spiced with strange words, such as the topography of the brain abounds in. These classic words dropped from his lips whenever he had to speak of lobes, nodes, ventricles, feet, pillars, tubercles, thalami, and a thousand other things. His observations invariably ended—all nor-

mal! (nel testo, ganz normal).

"'At one moment he held up, on the point of his scalpel a reddish, round bodikin, on which I had never before bestowed any attention, and jokingly he said,—"Behold

also the Pineal gland ganz normal."

"'For a little pleasantry the Professor made a short digression, whilst he related an anecdote pertinent to this little body, believed in the past to be the centre of life. He stated that a certain literary personage, named Brossette a famous Cartesian commentator, who, having lost a wife whom he dearly loved, resolved to keep, as a memorial of her, the most precious part of her. He therefore preserved the Pineal gland and had it put into a ring, which he religiously kept on his finger for more than thirty years after her decease. All the students laughed at this, but not I, for I had too often heard the

beliefs of the past laughed at in the schools, and some day yet I expect to hear those of the present day

laughed at.

""When the pieces of my poor brain were placed in a vessel, I felt the knife running over my breast and abdomen, and then, after learned cuts and tearings, a hand grasped my heart, raised it out of its mysterious nook, and carried it to the light of day. Some of the students now lighted their cigars; the smoke of tobacco has indeed its place in the dramas of the heart: why then should it not honor its dissection? The odor of my internal parts perhaps disturbed the olfactories of these genteel youths. Alas, what a metamorphosis of matter!

"'My heart, as a dethroned sovereign, was laid on my breast, the point of the knife was pushed into it, and it was split open in two or three directions. They fingered its walls and explored its every recess, but, deluded in

their search, they put it back into its lodging.

"'I tell you truthfully that these wounds, inflicted on the dearest of my organs, were the only ones that made me feel a sort of thrill, but I found comfort in the thought that the treasure had long ago been removed from its shrine; they sought for the prize in an empty casket. Sentiments, affections, passions, emotions, ravings, all its tumultuous array, I had given over to the custody of other keepers. It had no longer any need to beat, and therefore I stopped its motions. They might then cut away to their full content. A single strong contraction would have driven those jolly students and that grave, cold anatomist out of their wits; but for the present I denied myself this pleasure, feeling certain that my halfhour would in time come to every one of them. What they did with me afterwards it is unnecessary to tell; you know it all quite well. In the end I got off with only my arms and feet sound, excepting a few slits on them bestowed on me for pastime.

"'I was hoping that this entertainment had closed, when I was put to a fresh trial. The Professor, having cut off a little slice of my brain, put it between two glasses, and placed it under a lens which magnified enormously. "Behold," I heard him proclaim, "a nervous cell!" and all those gentlemen, one by one, looked at it, but on finishing I thought I heard them say to

themselves, "We knew all that before."

"'After this the Professor turned round to his scholars,

and with much solemnity declared, that as no special lesion was found to which death could be ascribed, they must hold that the cause of his patient's death must have been paralysis of the heart.

"'I laughed in all the little bits into which they had

divided my poor body.

"'A stroke of the bell emptied the amphitheatre. he sexton remained, and smoking the stump of a cigar and muttering, with a monotonous cadence, a vulgar jest, he threw my ill-used members into the casket; he then poured water over the stone table, to make it ready for another dissection, after which he took off his black, blood-stained tunic, and with his wonted refrain and the

last puffs of smoke, he went out of the school.

"'A profound silence now reigned in that chamber of death, when every part of my body, seized by the force of affinity, moved towards those which had been its neighbors during life, and in a short time I felt myself re-made, the edges of the wounds of the heart were united, it commenced to beat, and the blood again flowed through the most distant winding of the vessels. As if awaking from a fearful dream, I raised my head and looked around, and hearing no sound I arose from that dread repository and proceeded to the door. I was naked, and I must cover myself with something. would have made a devil of a row, and they would have shut me up again in the asylum if I had gone out in that state, and yet those young fellows had seen examined me from head to feet. So I took down from its peg your black gown and put it on me, I put a white covering on my head, and then I went forth from that place which I shall never be able to forget.

"'Once outside I became mistress of myself. I went around, as is now my custom, among the people. To-day I walk in professional vestments, which suit me just as well as any other, in which I disguise and conceal myself.

"'You have now, my dear Professor, the story of the post-mortem of a living woman. You may be grateful to me for the secret, as I am to you for all the kindness lavished on me by you, and for all the experiments made on my body, both in life and supposed death. I do not kiss your hand, fearing that I might thus infect you with a little of my own whimsicality, but I make you a low courtesy, and I hope to see you soon again in some new and interesting resemblance.

"'Continue to me that friendship which was so great a favor to me, and which shall never be forgotten by "'Your most devoted, "'LA PAZZIA.'"

THE MOODS OF THE SANE.—It has been said that, "speaking scientifically, we cannot affirm that anybody s perfectly healthy." If the pathologist can detect the symptoms of disease in the most apparently healthy body, no less certainly can the neurologist indicate subtle manifestations in the mental states of the sanest amongst us, which serve to warn us how perilously near we may all come at times to mental derangement. Just as it is impossible to set up a standard of bodily health of universal application, so is it with the mind; one man's measure of mental health cannot be taken as that of another. "Health" and "whole," are both derived from the same Anglo-Saxon term, hâl, and no one man has the completeness of either bodily or mental soundness at any one time. We may be sane (safe, sound), but at best only relatively, and the varying moods of our sanity may often be strangely like the true persistent phases of the acknowledged alien. There are few of us who have not moments of depression or abnormal excitement, which, if unduly prolonged, would make us the objects of unpleasant attentions at the hands of our friends, and not one of us can say at any time that we shall never find those unhappy moods, persist. Apart, however, from any such painful forebodings, it is an interesting subject to consider some of those mental attitudes of the perfectly sane, and trace their causes to their actual source. There is a posthumous paper in a recent number of the NEUROLOGIST, by Dr. Milner Fothergill, which deals - in the pleasant and instructive manner for which its distinguished writer was so celebrated with this interesting question. If we would rightly know the workings of the human mind in their varied conditions, we must study them, as the brilliant author tells us, in the insane asylum. What angry man amongst us may not find food for reflection, and learn the habits of self-control from the incoherent ravings of frenzy? What garrulous, self-centered man may not be rebuked when he sees his infirmity a little magnified in the flow of the talkative maniac?

The delusions of the over-sanguine, the groundless fancies of the visionary, the baseless conceptions of the jealous, and the morbid religiosity of the despondent man,

all find their legitimate projections in some fixed conditions common enough in the dread abodes of the insane, and all have lessons for us. The asylum held up the mirror to the observant eye of Dr. Milner Fothergill, showing him our natural and healthy moods when perverted by disease, mismanagement or neglect, into forms of mental disorder. A bad habit or the dominance of an unfortunate predilection may disturb the balance of an otherwise healthy mind, as effectually as the touch of a magnet on the balance wheel of an exquisite watch will impede its regular motion.

How easily is our mental balance disturbed! A single serious reverse may blight a man's hopes for life, yet with another and a sterner habit of thought the advancing phthisis of a Richard Jeffreys will not have the least ill effect. What a variety of moods are caused by food alone! A hungry man can scarcely be termed quite sane in comparison with one who is comfortably digesting the

dinner of one of the "city companies."

A cynic might turn upon us, and declare that the man who has just dined well evidences his cerebral disturbance by the ease with which a liberal subscription can be obtained from him, and that his less replete moments are his prudent and normal ones. When the Church desired to reduce us to a proper sense of our deserts and shortcomings, she bade us fast, and as fasting has always been associated with penitence, it might be argued by a theologian that we are more truly our real selves when hungry than full. Andrew Boorde, the monk-physician, in his quaint book, The Dyetary of Health, rather inclines to the "city company" idea of sanity, when he advises his readers to "Fyrste lyue out of syn, and folowe Christes doctrine, and than vse honest myrth and honest company, and vse to eate good meate, and drynke moderatly."

Shakespeare thought that the "lean and hungry" looking Cassius must naturally be dangerous, and the general testimony of English writers at any rate is to the close connection existing between fat folk and good temper. Dr. Fothergill was a grand example in himself, and we can picture the relish with which he wrote, "When the brain is well fed it has a sense of well being; when it is ill-supplied with blood, it is irritable, miserable, and despondent." But alas! the very process of feeding the brain and making general contentment in the body too

often vitiates the blood, and as the old writers would say, "disturb the humors." The good feeder gives a standing invitation to the gout, and the gouty material in the blood makes a man "choleric," that is to say, hasty and irritable. The over-fat, amiable man, has fits of "the blues," he often descends to the melancholy mood, and then as old Burton says, "he is the cream of human adversity, the quintessence, and upshot." A disordered liver has made many a one think he has sinned the unpardonable sin, and a good purge has often lifted a burden from the conscience as heavy as that of Bunyan's Pilgrim. Dr. Fothergill thought that the atmospheric conditions of Bath and Bournemouth are distinctly answerable for their religious tone, whilst the tonic effects of Clifton have much to do with its intellectual activity. It would be interesting to compare Margate and Brighton with the special moods of their visitors; but these theories may easily be pushed too far, and we might find ourselves inquiring what are the characteristics of Monte Carlo which foster the gambling spirit, and what makes the Neapolitans so lighthearted and frivolous. Perhaps diet has even more to do with the moods of the sane than atmospheric conditions. An old adage says that, "he who drinks beer thinks beer," but there is beer and beer. The German philosopher stimulates his brain to the highest intellectual exercises on beer, while our working classes deaden their not over active cerebral organization on something called by the same name. Whether we are as sane as we might be in creating any sort of mood by alcohol, is extremely doubtful, for most competent observers agree that the best sorts of intellectual, as of other work, cannot be done under its influence. "The accursed hag dyspepsia," as Carlyle called it, has been answerable for a good deal of the gloomier theology of the past and present. What a victim must have been that monk who wrote Hell Opened to Christians, with its appalling pictures of demons riving bolts into men's skulls, and toasting them on great forks! The author of The Imitation of Christ, on the other hand, must have been blessed with a good digestion, and a liver which gave him no "moods." His biographers say he was "a placid, kindly, fresh-colored old man;" and, indeed, his books reveal all that. Probably our best moods are always tinged with a shade of melancholy. Montaigne says, "the most profound joy has more of gravity than gaiety in it;" and Dr. Fothergill wrote of the mental attitude of "feeling

delightfully low spirited." "The rainbow of our thought life," as the author of *Thorndale* so beautifully expresses it, "is made of joy and tears, the light and storm." The dark and the bright threads of our life are so interwoven, that our healthiest attitude can never be unalloyed joy. The highest music, painting, and poetry most truly express the sanest moods of man when they exhibit joy chastened by the "sadness which is most akin to pain."

The lesson which we should endeavor to learn from a study of the moods which so easily possess us is the importance of a firm will-control acting like the inhibitory nerves. If our mental states are so often caused by pathological conditions, it is no less true that the mind can control the body; and the man or woman who, in popular phraseology, "gives way" to his moods, runs imminent risk of becoming their slave.—Editorial in *Br. Med. Jour.*

LAURA BRIDGMAN.—The recent death of Laura Bridgman, is thus commented upon by the *Medical Record*:

We do not at this day realize the intense interest which her case at one time aroused; and certainly there has been no reference, so far as we know, to the important data her history furnishes to pedagogy and psychology. The general facts regarding Laura Bridgman are well known. How at the age of twenty-six months, she lost entirely her sense of sight and hearing, and to a great extent her sense of smell and taste; and how, until she was eight years of age, she received no attempts at education. At this time it is known that she had quite lost all memory of her life before her sickness, she retained, absolutely, no visual or auditory memories. Dr. Howe's success in teaching her to talk with the hands, to write, read, etc., is also a familiar story.

Most interesting now to medical men is a study of her physiological and psychological condition, made by Professor Stanley Hall, just ten years ago. He found her totally unable to see or appreciate sensations of light from any kind of stimulus. Her deafness was equally complete, but she could appreciate different kinds of vibrations, and even knew her friends by their step. This must have been done, however, by the tactile or muscular sense. Her sense

of smell and that of taste were dull.

The tactile sense showed the most acute and remarkable development, and, as recorded by Hall, was as follows:

Tip of tongue,	I-50 inch.
Tip of right forefinger, volar surface,	1-35 "
Hips,	I-20 "
Tip of second finger,	I-I7 "
Tip of third finger,	I-I4 "
Tip of fourth finger,	1-13 "

The sensitiveness of the face at various parts was also very great, and the measurements in general, showed an acuteness of touch two or three times greater than the

average.

But the ordinary tests made with the æsthesiometer, gave no adequate idea of her exquisite contact sense, which amounted to a kind of normal hyperæsthesia, so that even specks of dust alighting on the face and hands were appreciated and annoyed her. Curiously enough her temperature sense was below the average, and the same was true for pressure sensations and electrical irritations. Her tactile memory was so extraordinarily developed that she could at once recognize friends whom she had not seen for a long time, by a touch of the hand. Her muscle sense, so far as it could be tested, was not unusually acute. The sense of equilibrium and of direction, was very well developed. Curiously enough, she was easily made dizzy and even nauseated by movements of rotation, and it was thought that possibly the semicircular canals were not destroyed by the disease which destroyed her hearing. Yet this seems somewhat improbable.

A very careful inquiry showed that the sexual instinct failed to mature, or show itself in any specific way. She never acquired any notion of the ways and means of its gratification. Although the strongest of human instincts thus failed to develop itself, yet with very little teaching there did develop fresh and original intuitions as to the nature of God and a first cause, and as to her personal responsibility and sense of right. It is encouraging to human progress to know that moral and religious instincts may spontaneously

develop and dominate rather than the sexual.

Brain and Civilization.—Address of Professor Meynert' of Vienna, before Congress of Naturalists at Cologne. The actual human social stand-point was, he said, the affirmation of the secondary "ich" in the struggle for existence as opposed to the primary "ich," the growth of the egoism that was allied to parasitism, without regard to the general weal. The aims of civilization must be the amelioration of

the struggle for existence (Kampf um Dasein). Christianity made the attainment of the highest aims of civilization its object. Anatomically the higher civilization of man was expressed in the preponderance of the cerebral convolutions as representing the secondary ich over the central ganglia, the seat of the primary ich. In the child when the primary grey matter of the brain preponderated over the secondary, the phenomena of parasitism were observable; congenital "moral insanity" was to be looked upon as an arrest of development, curable moral insanity as a functional disturbance of the cerebral cortex, which announced itself here also as the seat of civilization.-Med. Times.

NEURO-PHYSIOLOGY.

Spasms in Voluntary Muscles.—"Irritation" is not increased nerve action. A splinter under the nail is attended by a loss of tactile sensibility. A mote in the eye irritates, but it obscures vision. Why should indigestible food, oppressing the digestive functions of a child, be regarded as a source of increased nervous "discharges"? Such sources of irritation ought to be considered as depressing rather than exciting nerve action.

Dr. Anstie wrote: "Convulsive action of the muscles, as every one knows, are very common complications of neuralgia," and the same acute observer held that "pain is not a true hyperæsthesia. On the contrary, pain involves

a lowering of nerve function." (Neural., page 12.)
Dr. Hilton, in his work on "Rest and Pain," points out that the irritation of peritonitis induces contraction of the abdominal muscles. In the same way, pleuritis renders the chest walls fixed by spasmodic contraction of its muscles; while the muscles of an inflamed joint, he says, "are invariably contracted, and continually tend to increased flexion of the limb, not because such a position is easiest for the patient, which is not always the case, but owing to a reflex perturbation transferred to the muscles of the adjoining surface." (Page 96). That peripheral irritations do produce nerve paralysis must be admitted on the authority of Dr. Brown-Sequard. (Lect. Cent. Nerve. Syst., pages 160, 170), and others.

What is the "irritation" in these cases but a mild form of nerve paresis, just as "the irregular muscular action" which shows itself in tremor, fibrillary contractions, or in spasm, denotes the failure of the ordinary

nervous restraint over the corresponding muscles.

Why should "morbid conditions of the medulla oblongata," avowedly depending on "defective nutrition," be supposed to give rise to "explosive and atactic manifestations of nerve force" (Anstie, Neural., page 156). when they are much more naturally explained as depending upon nerve failure? The weak point in the theory of the text-books, is that nerve force is required to be displaying the full activity of robust health, and even more, in exaggerated "discharges" and "explosions" at the very time there is the most undoubted evidence of nerve failure and exhaustion. Why, in cases of "early and late rigidity" of muscles, should a clot in the brain be held to be an exciting irritant, seeing that the brain tissue is wholly insensitive, and may be cut, pricked or seared with a red-hot iron without eliciting any signs of pain? It is difficult to express here the multitude of facts which show the very frequent association of paralysis and spasm in disease of the brain and spinal cord. The paralysis is of the nerve and the spasm of the muscle-conditions very embarrassing to the theory of the day, but consistent and harmonious states in the theory of these pages. Is there not much significance in the statement of Seguin, that "a lesion of the lateral columns of the spinal cord produces paralysis with contracture" of muscles? Why? Because, as Dr. Brown-Sequard has shown, "the motor fibers run on the exterior of the cord in its antero-lateral columns." (Erichsen, Concus. Spine, pages 29 and 30.) Motor nerve disease and destruction induces contraction of the muscle, which later on becomes atrophied, partly, no doubt, from inaction.

It is on record, too, that while injury of the vagus nerve induces contractions of the gastric muscle, injuries of the spinal accessory nerve are attended by spasms of the trapezius or sterno-mastoid muscles. (Bryant's Surgery, page 208.) Other examples of a similar kind are not

lacking.

One might imagine that Dr. B. W. Richardson, F. R. S., intended to endorse the theory of these pages when he wrote as follows, regarding the convulsions of the drowning. He says: "The convulsive movements that are seen are unconscious movements; they are the same as those which mark the period of stupor in death by hanging, by

noxious vapors, by concussion; and they are simply the results of action of muscles from which the controlling power of the nervous centers has been removed." (Braithwaite, July, 1871, page 255.) [Italics are mine.] Dr. Henry M. Lyman, A. M., M. D., would appear also to have had a commendable distrust, if not an entire disbelief, in the theory of the text-books, when, in referring to "a temporary increase of muscular movement directly caused by the abolition of some special source of nerve impulse," he says: "Witness the tremendous liberation of muscular movement which follows paralysis of the influence of the brain, by the sudden decapitation of a fowl, for example." (Anæsthetics, Wood's Lib., page 26.) [Italics mine.]

One of Dr. Ferrier's experiments is so much in point here, that, at the risk of being tedious, I cannot forbear a brief reference to it. The right brain of a monkey had been exposed and subjected to faradization. Next day the animal "was found perfectly well." "Towards the close of the day following, on which there were signs of inflammatory irritation and suppuration, it began to suffer from choreic spasms," which rapidly assumed an epileptiform character. Next day hemiplegia became established with the usual symptoms of 'paralysis of the left arm and partial paralysis of the left leg.' On the day following paralysis of motion was complete over the whole of the lest side, and continued so till death, nine days after." Dr. Ferrier says, "In this we have a clear case of vital irritation producing precisely the same effects as the electric current, and then destruction by inflammatory softening resulting in complete paralysis, etc." (Functions of Brain, pages 200 and 202.)

In Dr. Farrier's view, the stage of apparent inflammatory action was accompanied by increased production and discharge of nerve energy, as seen in the choreic and epileptiform spasms. But "recent studies show that the inflammatory process is a destructive and depressive one, so far as the tissues are concerned; that it does not irritate and kindle into increased activity the protoplasm of the cells, but rather the reverse." (Editorial N. Y. Medical Record, January 30, 1886, page 128.) So that it is now definitely understood that the inflammatory process in brain tissue does the reverse of Dr. Ferrier's view, and

paralyzes rather than excites nerve energy.

Observe here, that the spasms of the muscles, on Dr. Ferrier's own showing, began to occur contemporaneously

with the "signs of inflammatory irritation and suppuration," and as this term "irritation," (on so good an authority as the able editor of the N. Y. Medical Record), must now be interpreted to mean depression and lowering of cell activity, it follows that the spasms referred to occurred from the absence or failure of nerve energy, and not from its undue excitation. Observe, too, that Dr. Ferrier held that this "vital irritation," as he saw it, but which we now know is depression or paralysis, produced "precisely the same effects as the electric current." Another evidence of the paralyzing character of electricity.

[From a brochure on the necessity for a modification of certain doctrines regarding the inter-relations of nerve

and muscle.]-By Dr. Thos. W. Poole.

THE INTERMITTENCE OF SENSATION.—An interesting article appeared in a recent number of the Revue Scientifique, so ably edited by M. Richet, on the curious phenomena of the intermittence of sensations. It is, perhaps, hardly recognized that no sensation is in reality constant, presenting a continuity of intensity, but is subject to variations from above downwards as the result of fatigue. In listening to the ticking of a clock or watch, while engaged in writing or reading, an undulation will be perceived in the acuity of perception, recurring rythmically. Three or four beats appear about the same strength, and these alternate with a cycle of lessening intensity. A further test consists in withdrawing a watch slowly from the ear. A point is soon reached at which the ticking is only audible by spasms, as it were, separated by periods of non-audition. It has been suggested that the careful measurement of this variety of fatigue would enable the degree of mental fatigue to be accurately gauged. The same phenomenon presents itself as regards vision, though it requires great delicacy of perception to be noticed. The practical lesson to be deduced from the preceding is that the best method of estimating sensorial fluctuations is to reduce the sensation to its minimum, so that the further diminution causes perception to cease. This subjective error is one which should not be lost sight of in reasoning on the data obtained through the medium of our sensations.-Medical Press and Circular.

HEMATOMA AURIS, OR THE "INSANE EAR."—Brown-Sequard produces hemorrhage into the auricle in guinea

pigs by section, and by irritation of the restiform body of the same side. This appears to me to suggest that hematoma auris is sometimes a peripheral trophic lesion, and comparable to analogous peripheral lesions met with in morbid conditions of the central nervous system, as, for example, in Charcot's disease. On this hypothesis the restiform bodies might be regarded as either trophic centers for the auricles, or, at all events, intimately associated with such centers. On this view, such slight traumatism as habitually sleeping on, for example, the left ear (especially if the pillow were hard) would act as an exciting cause of hemorrhage in the auricle of an individual predisposed to degenerative changes.—British Medical Journal.

NEUROTHERAPY.

EFFECT OF ANTIPYRETIC DRUGS ON THE LIVER AND KIDNEYS.—Dr Porter presented the liver and kidneys of a patient who had had a moderate attack of rheumatism. Later, antipyrine was given at rather short intervals, for the purpose of reducing the temperature, but it seemed to have had little influence. When the patient entered the hospital the temperature was 105° F., and after antipyrine was given it rose to 107°. Antipyrine was omitted and salicylic acid was given, when the temperature fell to 103°. Antipyrine again being given, the temperature again rose. Antifebrine was also given, but the temperature rose higher and higher, and the patient died with a temperature of 100° or 110° F. In looking over the literature he had found that some men who had experimented with such antipyrectic drugs as antipyrine, antifebrine, thalline, etc., have observed the appearance of casts and albumen in the urine, and at the autopsy extensive metamorphosis of the liver and kidneys; but they claimed that this was of no practical importance. Some had also observed that in patients treated with antipyretic drugs, especially typhoid fever patients, the duration of the disease was longer-forty-two days instead of about thirty-two days—as was observed when baths and antipyretic measures other than these drugs were resorted to. One writer had said that by the use of antipyrine he had succeeded in getting the highest death-rate, but he was inclined to think that the patients were more comfortable

while they lived. In studying the condition of the kidneys and liver in cases in which these antipyretic drugs had been employed, Dr. Porter had noticed in the history that the temperature had been higher than in cases in which such drugs were not employed, and he found a much greater degree of granular and fatty metamorphosis in the liver and kidneys. He had therefore come to believe that antifebrine, antipyrine and thalline, were not as safe drugs as we had been taught. The effect of the increased temperature occurring at some period of the disease after their use, was to cause this marked metamorphosis of the liver and kidneys—primarily of the liver, secondarily of the kidneys.—Philadelphia Medical Times.

WAKEFULNESS IN NEURASTHENIA -A wide range of opinion of the management of this condition found expression at a recent meeting of the Epidemiological Association. The use of drugs, with the exception of sulphonal, perhaps did not find much favor with the members. Some of them had found that their patients of this class slept when they were at the seaside, while others recommended the Colorado atmosphere. Some patients had been found to be able to sleep at sea, but not on land. The weight of evidence seemed to favor the resort to mountain air for patients who were anæmic, with a presumption in favor of sea air for those who were plethoric. Dr. Solly, of Colorado Springs, has found that a large proportion of anæmic neurasthenics find sleep on the mountain heights, but this cannot be said of the entire class. It is not improbable that other conditions besides those of climate enter into the account where the patient travels from our Eastern cities to the Rocky Mountains in pursuit of sleep. The jaded matron leaves the worries of the household, and the business man, broken down by the rush of daily cares, finds many things changed besides the atmosphere among the far Western altitudes. Still, as a rule, the climate gets all the praise when an improvement takes place. Business men from the East report a larger percentage of recoveries than the matrons, however, probably because fewer of their anxieties can follow them. Improvement in the assimilation of food, it should not be forgotten, goes a great way towards sleep-production in those who are affected with derangement of the nervous system; and this is one of the frequent accompaniments of any change of scene and environment. Not that there is always any marked increase of appetite or in the amount of food taken, but there is an appropriation of the food by the nervous centers to their consequent strengthening. It is often a prominent feature in neurasthenia that the food may be taken in and digested fairly well, but stops short somewhere in its distribution to the tissues and is largely wasted. Ordinarily, when this waste ceases there is a corresponding abatement of wakefulness and other neurotic symptoms.—N. Y. Med. Jour.

BIBORATE OF SODA IN EPILEPSY.—The objections to a long-continued use of the bromides in epilepsy are well known. Substitutes are eagerly sought after. Of the biborate of soda for this purpose, Dr. J. D. Munson, Medical Superintendent of the Northern Michigan Asylum, in his last report, which we quote from the American Lancet for July, says: "It has been found quite equal to the bromides in controlling the seizures. In some cases it has been found superior. It is prompt in its action, and does not affect badly the general condition, and is usually well borne after the first few doses. Biborate of soda tends to constrict the peripheral blood-vessels in a remarkable manner, and to this action is doubtless due its beneficial action in epilepsy. In epileptics with high arterial tension, borax is sometimes harmful, while in those with low arterial tension, but strong heart action, it is most apt to be useful." In cases with weak heart it acts badly, probably by its vasomotor action, obstructing still more the outward blood. Among the drawbacks to its use, he gives the following: "Given regularly in moderate doses it is apt to affect the nutrition of the scalp, the hair becoming rough and brittle, and in one or two cases alopecia has followed. A troublesome psoriasis is occasionally induced, which according to our experience, has not yielded readily to treatment, nor has the administration of Fowler's solution with it always prevented its appearance. In one case a suppurative inflammation of the middle ear was always induced by the use of the biborate." He advises that the drug be never given before meals, or for long periods continuously. It is well sometimes to alternate its administration with those of the bromides.—Medical News.

How to Act when Bitten by a Rattlesnake.—Dr. S. Weir Mitchell contributes to the August *Century* a pro-

fusely illustrated article on "The Poison of Serpents," from which we quote the following: "I am often asked what I would do if bitten while far from help. If the wound be at the tip of a finger, I should like to get rid of the part by some such promp auto-surgical means as a knife or a possible hot iron affords. Failing these, or while seeking help, it is wise to quarantine the poison by two ligatures drawn tight enough to stop all circulation. The heart weakness is made worse by emotion, and at this time a man may need stimulus to enable him to walk home. As soon as possible some one should thoroughly infilrate the seat of the bite with permanganate or other of the agents above mentioned. By working and kneading the tissues the venom and the antidote may be made to come into contact, and the former be so far destroyed. At this time it becomes needful to relax the ligatures to escape gangrene. The relaxation of course lets some venom into the blood-round, but in a few moments it is possible again to tighten the ligatures, and again to inject the local antidote. If the dose of venom be large and the distance from help great, except the knife or cautery little is to be done that is of value. But it is well to bear in mind that in this country a bite in the extremities rarely causes death. I have known of nine dogs having been bitten by as many snakes and of these dogs but two died. In India there would have been probably nine dead dogs."

Another Death from Suspension for Tabes.—The Lyons Med., No. 20, records a case of death from this treatment, reported by Dr. Gorecki. The patient was a man, aged forty, who for five years previously had been suffering from tabes, and who, after reading of the excellent results obtained by suspension, bought an apparatus. The disease had taken a very rapid course in him, paraplegia being almost complete. He was suspended two or three times daily by his man servant. The first seven suspensions were followed by most marked improvement, and the patient was able to walk a few steps. After the eighth suspension he suddenly lost the power of speech and hearing, his sight, however, being unaltered and no paralysis existing. Although active treatment was immediately resorted to, swallowing soon became impossible, sight was lost, and general paralysis quickly set in. The symptoms became more and more aggravated, and in twenty-four

hours the patient was dead, the imnediate cause of death being asphyxia.

SULPHONAL.—Connoily Norman, in the Dublin Jour. of Med. Sciences, Jan., 1889, says: I, Out of the twenty-two persons observed, in only two were any bad results noticed. These were specially unfavorably bad cases, and cases in which other sedatives had failed. 2, In no case was gastric or intestinal trouble observed. 3, In several cases refusal of food or a tendency thereto, existed. This was overcome and the appetite seemed to improve under sulphonal. 4, In several cases masturbation and tendency to sexual trouble existed. The drug appeared to lessen the tendency to self-abuse and erotic excitement. 5, In some recurrent cases it appeared to check or shorten the attack. 6. Out of the limited number of cases treated, the majority happened to be melancholiacs, but the drug appeared to exercise a hypnotic and sedative effect in various forms of insanity. 7. No patient complained of the drug or refused it for other than delusional reasons. 8, Sleep appeared to be natural, refreshing, and undisturbed by dreams.

Ammonia Carbonate as an Intestinal Antiseptic.— Gottbrecht has lately experimented as to the anti-fermentative action of ammonia. In his experiments he used carbonate of ammonium. A two per cent. solution of this salt delayed the decomposition of portions of fresh organs for nine days, a five per cent. solution for nineteen days. while a ten per cent. solution delayed it for sixteen days. In mixtures in which decomposition had already occurred, ammonium carbonate, added to the amount of five per cent., after a time killed the organisms; while a two and one-half per cent. admixture of the salt diminished their activity (smaller proportions of ammonium carbonate, onefourth to one per cent, not only did not diminish, but actually increased the activity of the organisms, so that putrefaction became more rapid). Sodium carbonate added to the same degree of alkalinity did not show any antiputrefactive effect.

Tapping and Draining the Ventricles of the Brain.—Dr. Kenn proposes this surgical operation in cases of dropsy of the ventricles or of abscess in them. He draws an analogy between the serous membrane of the abdomen and that of the brain, and pleads for a similar treatment in cases of similar diseases.—Polyclinic.

NEUROPATHOLOGY.

CALCIFICATION OF BRAIN MEMBRANES.-Dr. Osler has presented at the Philadelphia Pathological Society, a specimen of the calcification of the dura mater from an elderly woman. The dura was not specially adherent, but a large portion covering the left hemisphere, was a uniform plate of calcified tissue. On the right side there were irregular areas of lime deposits. The same condition existed on each side of the longitudinal sinus. There was general senile atrophy of the viscera, but no great deposit of lime salts in the blood-vessels (Univ. Med. Mag., Dec., 1888). Dr. Sneve has reported a case of calcified falx cerebri, in the Med. News of March 23, 1889. Dr. W. R. Jackson reports another more interesting in the Med. News of April 13, 1889. This case was a negro, aged forty, who died of syphilitic disease of the pia mater. The anterior two-thirds of the falx was calcified, the plate resembling a scythe-blade, about four inches long, one inch wide, and varying from one-fourth to one-half inch in thickness. Death was not supposed to be due to the calcified falx. - Analectic.

Bromomania.—G. Thompson, in the Lancet of May 11, 1889, calls attention to the abuse of the bromides in the treatment of epilepsy, in a paper on special hospitals for the insane. Epileptics are drenched with bromides, especially in out-patient departments, until a form of bromomania, now well recognized in asylums, is established, and the epileptic, who fifty years ago passed easily through life, has to be put under restraint.

NEURO-SURGERY.

Extraction of Nerves.—Professor Thiersch, with a specially constructed forceps consisting of a convex blade working in a concave blade, the surfaces of both being first channeled out and then smoothed down, grasps the nerve firmly at its point of emergence from the skull, and removes the entire bundle by torsion. He has done this twenty eight times in seventeen patients, five times on the supraorbital nerve, eleven times on the infraorbital, three times on the lingual, four times on the inframaxillary, several times on the mental auricularis major, intercostal, etc.

In the discussion before the late Congress of the German Surgical Society, Professor Horsley stated that he had operated fifteen times for trigeminal neuralgia, in about one-third of the cases with success. In obstinate and recurrent cases he had opened the middle fossa of the skull and divided the branches of the trigeminus at the inner side of the foramen rotundum and ovale. In one case he attempted to extirpate the Gasserian ganglion, but was prevented on account of hemorrhage. He regards most of the neuralgias in question as due to a peripheral neuritis.—Abstracted from Vien. Med. Wochenschrift.

Tenotomy for Epileptic Fits.—According to the Times and Register, Dr. Morton, of the Philadelphia Orthopedic Hospital, some time since operated for equinovarus upon a boy subject to frequently recurring congenital epileptic fits. The morning of the operation the patient had five attacks or more; after the operation they ceased to recur. It was not the ovary this time, our gynecological friends will please note, but the impression of operation that appears to have effected a cure of the fits,

THE PATHOLOGICAL ANATOMY OF CHOREA.—Dr. C. L. Dana reports in the New York Medical Journal the case of a male of eighteen years who had had choreic movements twelve years. Later, developed epileptic attacks of an hysteroid nature, and finally died of pneumonia. On

autopsy there were found:

In the brain, chronic leptomeningitis, non-adhesive, and therefore not severe. Diffuse and varicose dilatation of the small arteries, especially of the deeper subcortical matter and capsule. Degenerative changes in the arterial walls, no arteritis. Circumvascular lymph spaces greatly dilated. Cortical cells in most regions normal. The severest changes—vascular, interstitial and degenerative—were in the lower surface of the temporal lobes, in the internal capsule and adjacent parts of the corpus striatum, especially the lenticular nucleus and optic thalamus, the antero-internal part. Varicose nerve fibers. Cell degeneration in some of the cranial nerve nuclei. Slight connective-tissue increase in the pyramidal tracts. In the spinal cord, slight leptomeningitis; congestion of the cord, especially in the lateral columns. Double central canal.

EDITORIAL.

[All unsigned Editorials are written by the Editor.]

Fons Vitæ.—This time it is not Ponce de Leon seeking among the Bahama Islands but failing in his search after the fountain of perpetual youth, flowing from the bowels of the earth, nor the Witch Canidia (whom Horace describes) converting the bruised flesh of fiery Roman steeds of the amphitheater into life-giving draughts, but a French savant of the Academie, our venerated and venerable confrere directeur de l'Archives de Physiologie and president of the Biological Society, who has found the fountain of rejuvenescence in fluida seminalis canina—fons et origo vitæ; and the announcement is gravely made by the venerable master in physiology, and facts indisputable are given by him to prove the rejuvenating power, at least for a time, of the new-found essence-of-life—a power which

Can confer * * * long life, give * * * victory * * * In eight and twenty days (even in eight and twenty hours or less) * * * make an old man * * * a child.

Thus excelling Ben Jonson's alchemist.

You knew me six months since [says the Parisian savant]. I was old, broken down, my mind even enfeebled; my sphincters had lost their strength; I was slowly drifting into senility, that which is not surprising, since I was born in 1815. Look at me to day. My eye is brilliant, my words are clear-cut and [distinctly uttered, my intelligence is brighter than ever. I work in my laboratory twelve hours daily, and I am not weary at night. Nes sphincters fonctionnent merveilleusement, le jet de mon urine n'a rien a envier au plus vigoureux des garcons: en un mot j'ai retrouve mes vingt ans.—Societe de Biologie, June 1st, 1889.

Guided by the views and experiences of the past, expressed as far back as 1869, in his lectures and the special experiments of 1875, when he restored an old dog, to comparative youth, he has this year repeated these experiments on animals and upon himself, and announced the results above indicated with great confidence.

After subcutaneous injections of blood from the spermatic veins of a young animal mixed with the juice

obtained by crushing its testicles with a little water, his muscular strength in great measure returned; intestinal atony from which he suffered disappeared and defecation became normal again; the bladder regained its contractility, as shown by the quotation above; mental exertion became easy again, and his youthful vigor returned.

When these remarkable facts were reported to the Paris Société de Biologie, some of the members threw doubts on the conclusions and attributed the results to

imagination.

And no serious announcement before the Société de Biologie has ever been so facetiously received by its members. His colleagues of the Academie have made it the subject of jest, and whole pages of humorous reference have appeared in the medical press at the distinguished savant's expense. But there is something in the old physiologist's discovery nevertheless—there is life in the spermatic veins, just as there is power in gastric and pancreatic juices, and the truth is being made apparent by confirmatory experiments of others:

Dr. Variot has made a later communication to the Société de Biologie in which he gives details of three cases of weakness due to old age, treated by subcutaneous injections of a liquid extracted from the testicles of guinea pigs and rabbits, and the success was as great as in the case of M. Brown-Sequard himself.

Dr. Brown-Sequard also injected the liquids obtained from the other glands of the body, and he finds that that obtained from the lungs is toxic, that from the liver and kidney is indifferent, and that from the testicle salutary. He thinks also that the liquid obtained from the ovaries may be tried in weakness from old age in women, and is now making experiments to prove this point, and asks some of the lady physicians to try it on themselves.

The exalted position of M. Brown-Sequard entitles the most startling statements he may make to a respectful

and considerate hearing.

The distinguished physiologist of France is not often misled or misleading, and his recent remarkable statements certainly cannot be attributed to youthful enthusiasm, and they are assuredly not due to senile delusion, for though advanced in years he is neither in his dotage nor demented. We pin our faith still to the old savant. Physiology is still moving onward and upward.

The Medical Record of August 31st, published a report by Dr. Henry P. Loomis, of "An Experimental Study of the Brown-Sequard Theory," on the following observations confirmatory of Dr. Brown-Sequard's experiments:

"I can see no reason to anticipate danger from the fluid prepared under proper antiseptic precautions, provided the material used be

absolutely fresn and free from all traces of disease.

"My attention was called to the necessity in this last particular, by having discovered in specimens taken from an apparently healthy animal, a solitary tubercle in which were demonstrated tubercle bacilli. In none of the cases have I seen any bad results, and only in a few has there been a moderate amount of pain at the point of injection, lasting from six to eight hours.

"I can explain the singular nervous affection apparent in certain of the cases only upon the theory that upon the nerve centers the mixture exerts some powerful, but as yet unexplained, influence, which, even if its use be eventually proved beneficial in some cases, must render its employment to others a matter of caution. It is far from safe to say and proceed upon the belief that 'if it does no good, it does no

harm.

- "I seem to see in almost all the cases of old men subjected to the experiment an increase in strength and vitality which certainly persists for several days. I have noticed nothing in the least resembling the secondary depression which so commonly follows the use of ordinary stimulants.
- "When used in cases of actual disease, no modification of pathological conditions or processes has been recognizable.

"I therefore conclude:

- "That the injection of this mixture does, as claimed, produce 'nutritive modification' in the tissues of elderly men, due probably to the stimulation of the nerve centers.
- "As far as my own experiments are concerned, sufficient time has not yet elapsed to justify an affirmation or denial of the correctness of Brown-Sequard's second conclusions.

"There is in the theory sufficient ground for further experiment."

If we but reflect a moment upon the richness of the semen in chemico-physiological nutrients, the reconstructive proteids of which it is composed, it is not strange that its hypodermic employment or the subcutaneous injection of extractives from it, as has been suggested by a well known laboratory of this country, should show rejuvenating results; and from this fact alone, aside from Brown-Sequard's authority and established credibility as a physiological experimenter, are we prepared to accept with credence the strong statements of the savant of the Biological Society, though received with astonishment and doubt in so many quarters. Under the record we are disposed to write Credo, for Brown-Sequard has said it.

The Insane of Morocco.—One of the members of the French commission recently sent to Morocco, has contributed to a Parisian periodical a series of interesting letters respecting the internal condition of that country, and especially of Fez, one of its two capitals, and the residence of the sultan. The deplorable fate of the insane of Fez, as depicted by so reliable and painstaking an eyewitness, is such that we deem it of value to translate and reproduce for our readers, the account given by this French writer, of the barbarous treatment of this most unfortunate class in a populous city not many miles removed from the southern border of civilized Europe.

That the reigning Sultan of Morocco, Muley-Hassam, an energetic but unrestricted ruler, who gives the widest license to public slave markets in the streets of Fez, and who is said to have amassed enormous riches by the plunder of his subjects, should be able to maintain his policy of isolation and non-intercourse, is, as is well known, owing to the jealousy of the European powers. Great Britain already possesses two-thirds of the foreign trade of Morocco. Italy dreads the absorption of this important territory and population into French Algeria; Austria, as a Mediterranean power, and even Germany, on account of commercial possibilities, favor the existing status; while Spain, by reason of geographical relations, as well as historical rights, will, if possible, allow the plum to fall into no other lap than her own.

While riding one day in the quarter of the city occupied by the dealers in pottery-ware, I noticed a crowd collected before a house as if something extraordinary was going on in the interior.

My guide cried, while pointing at the house, "Maboul! Maboul!" This word means an insane person, and hence I understood that such unfortunates must be contained within the house. I wished to enter but my guide protested as if it would be attended with danger. I acted energetically, and elbowing aside the door-keeper, penetrated within.

It was indeed a receptacle for insane—for dangerous maniacs. One of them had just set fire to the place, which explained the commotion in the quarter.

These maniacs were imprisoned in boxes but little more than a yard square, arranged around a court. Their necks were in iron collars of about the size of two hands. Each collar was riveted to a large chain, sealed to the wall. They are only when relatives or compassionate friends brought them food from without.

All that I could see were clad in rags. In the first box at the entrance a maniac was laughing as if in a moment of good humor, while at his side the one that had set the fire was bounding with a fury

timited only by his chain and uttering frightful yells. He still had in his hand a little pipeful of "Kif," a species of brutalizing poison, even for the well inhabitants of Morocco. At the left of this latter maniac was confined an old, yellow and dried-up man, nearly naked and with a râle in his throat.

In an upper story of the bouse some twenty women were crying and gesticulating, and as I could not explain to myself their presence there I was informed that this story of the house served as a prison for the street-walkers of Fez. Below, furious insanity; above, amorous insanity.

Only the dangerous insane of Fez are confined; the others, the harmless insane, are permitted free movement about the city. They are even respected. I often encountered a man of not less than sixty years of age, in the streets, a "maboul" who promenaded naked—as naked as a worm—and this too without provoking a mocking smile even on the faces of the children. Some passers even kissed the old man's shoulder.

One grows accustomed to all things: for at the end of six weeks I grazed past the old man without any sensation of surprise; and if I had remained six weeks longer it is barely possible that I should have practiced kissing his shoulder!

Legal Execution by Electricity.—The execution of criminals by electricity is now required by the law in New York. The Medico-Legal Society gives the following as the legal method of procedure:

A stout table covered with rubber cloth, and having holes along its border for binding, or a strong chair should be procured; the prisoner, lying on his back or sitting, should be firmly bound upon this table or in the chair; one electrode should be so inserted into the table, or into the back of the chair, that it will impinge upon the spine between the shoulders; the head should be secured by means of a sort of helmet fastened to the table or back of the chair, and to this helmet the other pole should be so joined as to press firmly with its end upon the top of the head. A chair is preferable to a table. The rheophores can be led to the dynamo through the floor, or to another room, and the instrument for closing the circuit can be attached to the wall. The electrodes should be metal not over one inch in diameter, somewhat ovoidal in shape, and covered with a thick layer of sponge or chamois skin. poles and the skin and hair at the points of contact should be thoroughly wet with warm water and the hair be cut short. A dynamo generating an electro-motive force of at least 3,000 volts should be employed; either a continuous or alternating current may be used, but preferably the latter; the current should be allowed to pass for thirty seconds. The exe. cutions are to take place only in the state prisons.

Since the enactment of this law much objection has been raised. The *London Lancet* has commented unfavorably upon the method, regarding it as barbarous, and

certain electricians of New York think the method impracticable as a certain death penalty, for the reason that 1,500 volts, the minimum of electric power under the new law, has been found incapable of killing in one instance. In the case of a prisoner already condemned to death under the new law, his attorney has put in the plea that the new method of executing the death penalty is "cruel and unusual," and therefore against the spirit of existing law on the subject of the death penalty in New York.

As in the past, with every innovation of science, objections will be numerous against the method, mainly, because it is a novel innovation on established usage.

But all defects will probably be remedied and objections satisfied, and electricity will probably prove to be the "coming motor" to remove murderers, as it is becoming our most approved servant in so many other respects. It carries us about, it illumines our environments, it speaks, sings, plays and writes for us; carries our messages and fights for us. It will soon carry us through the air. Why should it not be employed to execute the law's retribution on the murderer? The objections of the hour are mere cavil. Greater and stronger objections have been raised to every well established procedure.

Phenacetine and Gelsemium as an Antineuralgic, Antirheumatic, Antiepileptic and Antispasmodic—Thirteen to fifteen grains for an adult and three to five or ten for children and youth have been found, in our experience, quite efficient in neuralgia, rheumatism and epilepsia. Full doses act better than fractional, and twice or thrice in twenty-four hours is often enough to repeat.

The temperature may fall to 98° or lower without bad effect, and profuse perspiration often takes place. Cyanosis also sometimes appears, but this is not serious.

In a case of imbecility with marked restlessness and epilepsy this remedy, conjoined with gelsemium in one-drop doses (green root tinct.), twice a day, exerted a most marked effect in restoring tranquillity and physical quiescence and in suppressing, for weeks at a time, all epileptic paroxysmal display.

Under this treatment the boy has become much more like other boys of his age than formerly, his former automatic, impulsive movements, having become transformed in acts of more deliberate volition. The boy has also hypophosphites and iron as a tonic reconstructive course.

Insane Asylum Investigations.—

The superintendents of asylums for the insane, as a class, are by no means inferior to the average of our profession, either in attainments, character or disposition. Their position exposes them to constant assaults upon their reputation. No degree of humanity or tict will proteet them from charges founded in the delusions or malice of their patients, and those who are most faithful and vigilant in guarding against abuses and enforcing discipline are most certain to incur the illwill of lawless and vicious subordinates. Accusations coming from such sources may demand investigation, but they should be looked upon with suspicion, and if eagerly caught up and assumed to be true by the public, men who value their reputation will be likely to seek some other employment. Even the much-abused a tendants are entitled to the same charity. In all well-regulated institutions they are selected with great care among numerous applicants; they are carefully instructed in their duties, and whatever may be the shortcomings of some of them, it is safe to say, that as a class, they are caring for the unfortunates under their charge with more skill and patience than most of their critics would exercise in their places.

In the second place, when abuses are discovered, the responsibility should be placed where it belongs. If an institution of this kind is made a part of the spoils of partisan politics, if its funds are used to enrich mercenary politicians, and its offices to reward their heelers, the community which allows such a state of things has no occasion to be surprised or shocked if its insane are crowded into insufficient and unsafe quarters, if they are hungry and naked, if they are neglected and abused by incompetent and vicious attendants. The guilt is not confined to those personally concerned in such abuses; it is shared by those who, actively or passively, have abetted the system which gave them their opportunities for mischief. To rest content with their punishment while the system remains unchanged would be merely setting another set of wolves to watch the sheep. combine a poor-house and an asylum for the insane under the same management, have not usually had very satisfactory results, at least, so far as the latter is concerned. The standard is apt to be set by the accommodations and treatment allotted to paupers, and whether sufficient for them or not, it is not suited to the needs of the insane.

The abolition of mechanical restraint * * has been advocated in some quarters with an enthusiasm which seemed to make it an end to be obtained at any cost, rather than a means of securing the comfort and improvement of the patients. It might be imagined, from some of the accounts which have been published, that interference with the personal liberty of the insane was the cause of all their misconduct, and that an asylum for their care and treatment would run itself, to the satisfaction of all concerned, if the patients were only allowed to do as they pleased, without interference, except by way of friendly suggestion from physicians and attendants. Now the fact is, that some of the insane are no more amenable to reason than the sane. Tact, patience and

kindness will work wonders in many cases, but there are those who can only be restrained from mischief by physical force in one form or another, and others with whom the only alternative is fear. Attendants are expected to control their patients. Their reputation, and the comfort and safety of their inoffensive patients, as well as their own, depend upon their keeping the disorderly and violent in subjection. To struggle, for hours at a time, day after day, with a powerful man, or to be continually subjected to assaults from one who understands and presumes upon his impunity, is a pretty severe strain upon the mildest disposition; and, though unfortunate and wrong, it is not strange that human nature does not always endure the trial. We have reason to think that in some cases where the use of mechanical restraints has been forbidden in the quiet and order of the wards, so gratifying to officers and visitors, has been due in part, to the clandestine use, by attendants, of still more objectionable means.

The proper care of the insane is a work of sufficient difficulty to task all the resources of the best mind. Routine and inflexible rules, whether self-imposed or dictated from without, will often stand in the way of the best results. The physician may be helped by the suggestions or example of other, but if he has not sufficient intelligence and humanity to be trusted with the care of his patients, the probability is that little will be gained by hedging him about with vexatious restrictions; if he has, they are more likely to do harm than good.

It is well that those who have the care of this most unfortunate and defenseless class should feel that abuses and neglect cannot pass unknown or unpunished, but public opinion, in such cases, should be not only a terror to evil doers, but a praise to them that do well.

The July 27th number of the Journal of the American Medical Association contains this timely and judicious defense of our long-suffering friends, the superintendents of the hospitals for the insane, against the unjust suspicions and unfounded prejudice of the public, apropos of the late Cook County Hospital investigation, and we are grateful to see this representative journal coming as it should to the just rescue of our much-tried brethren of the hospitals. "Sufferance," as Shakespeare hath it, seems to be of late years, "the badge of all the tribe." But a day of justice is dawning when popular prejudice, no longer fostered by professional ignorance displayed in unjust and prejudiced medical editorials and sustained by unenlightened medical opinion, will give way to truth.

The probe of public investigation will reach the bottom of asylum abuses, and the wronged patients and wronged superintendents will be seen in their true light, the former in the light of inadequate public provision for their proper care, political abuse, etc.; the latter in the light of the true humanitarians they are, doing all they

can with the means at command for the welfare of these unfortunates, and anxious to do more. When will the members of that profession whose historic glory it is that it first struck the shackles from the lunatic and broke down the barriers of human prejudice against him, giving him the first fair chance to live like other human beings, in the light of day, out of the dungeon's gloom, and in the free sunshine and free air of a reasonably unfettered liberty, be appreciated as they ought to be?

The broken chains struck from fettered lunatics away back in the past by one of our brethren of France, when popular prejudice was against the lunatic, instead, as now, against his physician and best friend, will be our monu-

ment.

The popular hand that now points in scorn, when the true relation of the profession to the lunatic in our public hospitals shall be correctly understood, will be uplifted in praise of the unswerving and long-suffering and muchwronged friend of the insane, the asylum superintendent.

It will be in order then for medical journals generally to do what they have not done in the past, to speak out in defense and praise of their brethren, the asylum superintendents, as the ALIENIST, who knows from personal experience what it is to be a public asylum superintendent and who knows personally most of the asylum superintendents of the United States and their severe trials, has done for the past ten years.

The Berlin International Medical Congress of 1890.—The following announcement has been received:

We, the undersigned, do hereby give notice, that according to the resolution passed at the Washington meeting, September 9, 1887, the Tenth International Medical Congress will be held in Berlin.

The Congress will be opened on the 4th and closed on the 9th day

of August, 1890.

Detailed information as to the order of proceedings will be issued after the meeting of the delegates of the German Medical Faculties and Medical Societies at Heidelberg on the 17th of September in the current year.

Meanwhile, we should feel sincerely obliged if you would kindly make this communication known among your medical circles, and add

at the same time our cordial invitation to the Congress.

VON BERGMANN.
VIRCHOW.
WALDEYER.

A Timely Reminder.—The Boston Medical and Surgical Journal reminds its readers in the hub city that

"woman has some organs outside the pelvis."

These are words spoken in season, and they are good to look upon, like "apples of gold in pictures of silver." Some day a monument of brass will be erected over the speaker of such timely words, to commemorate their moral courage. There is salvation for woman in these words. What gynecology, returning to reason, is beginning to recognize as the nerve counterfeit of gynesiac disease, will make the reproach cast on American gynecology by an English gynecologist, that "now in America the womb is to have no peace," soon be (and is now) no longer justifiable.

The Medico-Legal Society.—The October meeting will be held at Hotel Buckingham, on Wednesday,

October 16th, 1889, at eight o'clock sharp.

Order.—I, Medico-Legal Points in Case of Michigan vs. Millard; by Prof. Victor C. Vaughan, of Ann Arbor, Mich. 2, The Post-Mortem Absorption of Strychnia; by Geo. B. Miller, M. D., of Philadelphia. 3, Life Insurance; by Dan. Jordan, Esq., Fredricton, N. B. 4, Meconeurapathy; by Chas. H. Hughes, M. D., of St Louis, Mo.

The time of meeting has been changed to third Wednesday of each month, of which members will take

notice.

The meetings are open to all persons interested in the science. Contributions to the Library are solicited. Members desiring copies Medical Jurisprudence of Inebriety, or Series No. I Medico-Legal Papers, or wishing to enroll in the International Congress and receive the Bulletin, please notify the President. Those who have not remitted enrolling fee to Congress (\$3) will please do so, as the money is needed for publishing the Bulletin. Subscribers to the Groups of Portraits, at \$1 each, size suitable for framing, will receive them if remittance is made.

Frank H. Ingram, Asst. Secretary.

The American Public Health Association.— The Seventeenth Annual Meeting of this Association will be held in the Hall of the Brooklyn Institute, Washington and Concord Streets, Brooklyn, October 22, 23, 24 and 25, 1889.

Addresses of welcome will be delivered by Hon. Alfred

C. Chapin, Mayor, on behalf of the City, and by Alexander Hutchins, M. D., on behalf of the Medical Profession.

The following topics have been selected for consider-

ation at the meeting:

I. The Causes and Prevention of Infant Mortality. 2, Railway Sanitation; (a) Heating and ventilation of railway passenger coaches; (b) Water-supply, water-closets, etc.; (c) Carrying passengers infected with communicable diseases. 3. Steamship Sanitation. 4, Methods of Scientific Cooking. 5, Yellow Fever; (a) The unprotected avenues through which yellow fever is liable to be brought into the United States; (b) The sanitary requirements necessary to render a town or city proof against an epidemic of yellow fever; (c) The course to be taken by local health authorities upon the outbreak of yellow fever. 6, The Prevention and Restriction of Tuberculosis in Man. 7, Methods of Prevention of Diphtheria, with Results of such Methods. 8, How Far should Health Authorities be permitted to apply Known Preventive Measures for the Control of Diphtheria? 9, Compulsory Vaccination. 10, Sanitation of Asylums, Prisons, Jails and other Eleemosynary Institutions.

The Success of the Recent International Congress of Medical Jurisprudence ought to be hailed by the medical profession of the country with pleasure and with praise to the promoters of its prosperity. It is through such bodies that certain great medical truths are best advanced in their practical application for man's welfare, and are thus made to serve the purpose in the world for which they are discovered. The extension of medical knowledge into the domain of law and its utilization for the world's good is and ought even to be gratifying to medical men, and should always be encouraged and promoted by members of a liberal and humane profession. The success of all medico-legal endeavors and the prosperity of medical-legal societies is, reflexly, the success and glory of Medicine. Such societies secure the enforce ment and efficient application of certain medical discoveries and truths of our science and art which, without their aid, would be but the still-born, inanimate offspring of science.

The multiplication and prosperity of medico legal societies and the consequent extension of their influence presages the advancement and glory of Medicine.

bed chamber, the laboratory and the battle-field are not the only fields of Medicine's triumph. Its trophies are to be found wherever its saving or destroying hand is reached out for by bench and bar. It saves the virtuous and the true, helps the helpless, and suppresses and destroys crime and the criminal.

As it walks with the pestilence unsolicited, to mitigate its horrors, so it goes hand-in-hand with justice in our courts, to rescue the victims of design from the violence of ignorance or to punish the otherwise unseen plotter

of murder

A noble tribute to a noble profession is paid in the formation of medico-legal societies soliciting light from Medicine to lawfully apply to the welfare of man.

Dr Joseph Workman.—Our worthy contemporary, the American Journal of Insanity, whose judgment of sane as well as of insane persons is usually quite sound, pays, in the April number, a well-deserved compliment to our highly esteemed and most worthy collaborator, Dr. Joseph Workman, of Toronto, who, from the foundation of the ALIENIST AND NEUROLOGIST has so faithfully and efficently favored our pages with the always entertaining and valuable work of his industrious pen.

With the presentation of our collaboratorial friend's portrait, the Journal justly pronounces Dr. Workman "one of the most eminent of America's alienists." We cordially concur with our journalistic contemporary in its estimate of our distinguished collaborator, and take this occasion to make known our pleasure at this testimony of appre-

ciation of our worthy colleague.

Truly, as the Journal of Insanity says, and as our readers have, on many occasions, realized, is Dr. Workman gifted with a command of beautiful language, a wit as keen as a Damascus blade, a perfect grasp of man's mental attitude and a profound knowledge of science, and "in medical circles his name is placed at the head of the list." "He is not only an accomplished scholar, but has a wonderful command of beautiful and terse English," all of which our pages fully confirm.

We cordially join our esteemed contemporary in wishing our friend peace and happiness commensurate with the good deeds that have proved the Golden Rule to be

the simple creed of his life.

A Good, Long Sulphonal Sleep, and No Harm Done from the Large Dose-Three Tablespoonfuls.—A Berlin correspondent of the Medical Press and Circular details the following remarkable occurrence:

On January 5th of the present year a workman in Riedel's factory took a full tablespoonful of sulphonal, that he might for once have a good sound sleep. Half an hour later, feeling no effect, he took two tablespoonfuls more and went at once into the village beerhouse. In about half an hour after taking the second part of a half-glass of beer, such a tired feeling came over him that he left the remainder of the beer on the table, "went home and so to bed," as Pepys says. He remembers nothing after this. At ten o'clock on the morning of January 8th he was aroused from his sleep, recognized the people about him and wert off to sleep again. On the 9th, at one in the afternoon, he was awakened by his wife, and remained awake till eight in the evening, felt stupid, but was rabidly hungry, and enjoyed some food. The next morning he got up at seven o'clock, and from that time felt no trace of tiredness or mental disturbance.

Three tablespoonfuls of sulphonal would equal about 420 grains. No wonder he slept for days and nights. The wonder is that he sleeps not now.

Mr. Thomas Workman.-

Mr. Thomas Workman, head of one of the largest mercantile houses in Canada, director in and counselor of many of the chief and financial institutions of the province, and twice returned to parliament for the first city of the federation, closed a long and successful life October 9th,

at the ripe age of seventy-six years.

Mr. Workman was born near Lisburn, County Antrim, Ireland, on the 17th of June, 1813. He came to Canada in 1827, after a peri ous voyage in which his ship narrowly escaped disaster. On the completion of his education (begun in Ireland) at the old Union School in this city, he entered the store of the late John White, transferring his services in 1834, to the firm of Frothingham & Co., where he took the post of junior clerk. Being admitted a partner in 1843 he so n assumed a chief place in the management. In 1859, on the retirement of Mr. J. Frothingbam and his brother, the late William Workman, he became senior partner, the house continuing to progress in influence, wealth and the honorable estimation of the mercantile world. For fifty-five years it has occupied the same premises on St Paul Street, which have been for much of that time recognized headquarters of the hardware trade of Canada. Besides attending to the interest of this large business, Mr. Workman has also been prominent in the management of many financial institutions in which he had invested his surplus capital. He was for twenty years a director and for many years president of the Molsons bank, president of the Sun Insurance Company, and a director of the City and District Savings Bank, and of the Canada Shipping Company. He also took an interest in philanthropic work. He was twice president of the Irish

Protestant Benevolent Society, a life governor of the General Hospital and a life governor of the Frazer Institute, to which he liberally contributed. He was one of the founders of the Church of the Messiah, of which he was a member. He also gave freely to the cause of education as represented by our chief seat of learning, the McGill College. He traveled much, both in the Old and New Worlds, and there were few countries, except Russia, he did not visit at various times. His views were broad and his sentiments liberal. His industry was untiring. His death takes away from Montreal's mercantile life a clear-headed, strongwilled, hono able-minded man, whom it will not soon forget.

The above is the record the deceased made among those who have known him best—a record which only a worthy man could make. We tender his surviving brother, Dr. Joseph Workman, our distinguished collaborator, our sincere sympathy in this great bereavement. It is hard to part with such a man, either as friend or brother.

The Recent Death of Dr. Philippe Ricord, whose fame as a surgeon and syphilographer recalls the days of the American Frenchman's glory now departed, when Ricord's word was law in the medical salles of the Paris hospitals. Ricord was born in Baltimore, Maryland, in 1800. He died in Paris, October 22nd.

McGill University Royally Remembered.— In the will of the lately deceased Mr. Thomas Workman, of Montreal, a brother of Dr. Joseph Workman, of Toronto, Canada, this renowned University is the recipient of one hundred and twenty thousand dollars, to found and maintain a professorship of Civil Engineering.

Where are the Ophthalmologists Leading Us?-Since Dr. Geo. I. Stevens published his remarkable monograph the tendency of medical men in some quarters has been almost as marked in the direction of ophthalmologising neurology as that of General Medicine not long ago in some quarters to gynecologize about all the diseases of women. The gynecological hallucination has measurably passed away, the ovarian delusion has contracted to somewhat reasonable proportions, save with a few gynecologists and surgeons who still think a diseased woman has no right to retain her ovaries; and gynecology discusses its past mistakes under the caption of "Nerve Counterfeits of Womb Disease;" but now the ophthalmologists are taking their turn at claiming allnot all oculists, but certainly many of them. Here is a letter that reveals the spread of the ophthalmological craze:

DEAR DR. HUGHES:

SAN FRANCISCO, CAL.

The intense heat of the San Joaquin Valley drove me to the city, where it is cool the year round. I am under the care of an oculist here, who says all my headache and horrible nervousness is a result of a weakness of the muscles of the eyes. I have been going to his office for more than two months, but am no better. My headaches, mental difficulty and all those unnatural, queer feelings, are increasing. I feel that I shall soon be absolutely insane if no change comes. I tell the doctor. He says it will all disappear when the eyes are right.

I have had the prescription which you sent me filled a number of times, but lately it has no effect. What shall I do? I have no sound sleep, and days and nights are filled with horrors indescribable. *

Now this lady wore glasses before she ever complained, and got her education and profession after. Domestic bereavement, financial misfortune and disappointment of the fondest hopes of the heart came to her; insomnia, headache and grave neuropsychic disorder then followed these, but the eye medical consultant saw only the eyes and looked no further. He was an oculist.

We hope for the honor of Medicine that the new ophthalmological craze will keep within legitimate bounds, and not appropriate the whole field of neurology and psychiatry, as gynecology once threatened. There are neural diseases due to eye strain and others intensified by them, for affections of the eye are largely neuropathic; and there are morbid conditions of the eye due to general neuropathic states. Our home experience with ophthalmologists has been more satisfactory. Not every case referred by us to our ophthalmological confreres has been traced to disorder of accommodation, while all defects have been cheerfully corrected by them and reasonably estimated as sequent or associate, or possibly aggravating morbid influence; and while acknowledging our indebtedness to ophthalmology, we at the same time make this protest against the manifest tendency, apparent in some quarters, to go too far.

Prizes for Essays on Medical-Legal Subjects.-The Medico-Legal Society of New York announces the following prizes for original essays on any subject within the domain of medical jurisprudence or Forensic Medicine:

I, For the best essay-One Hundred Dollars, to be known as the Clark Bell Prize; 2, For the second best essay—Seventy-five Dollars; 3, For third—Fifty Dollars.

The prizes to be awarded by a commission, to be

named by the President of the Society, which will be

hereafter announced. Competition will be limited to active, honorary and corresponding members of the Soci-

ety at the time the award is made.

It is intended to make these prizes open to all students of Forensic Medicine throughout the world, as all competitors may apply for membership in the Society, which now has active members in most of the American States, in Canada, and in many foreign countries.

All details of the award will be determined by the Executive Committee of Medico-Legal Society, New York.

The papers must be sent to the President of the Medico-Legal Society of New York, on or before January 1st, 1890, or deposited in the Post-Office, where the competitor resides, on or before that day.

The name of the author of any paper will not be

communicated to the Committee awarding the prizes.

All persons desiring to compete for these prizes will please forward their names and address to the President or Secretary of the Medico-Legal Society of New York.

In case the essay is written in a foreign tongue, it should be accompanied by a translation into the English language. The Committee of Award to consider the merits of each essay, independent of their opinions of the author's views. It is hoped that all our members, whether active, honorary or corresponding, will take an interest in this effort to stimulate scientific inquiry and research in questions relating to medical jurisprudence.

Scientific societies in all countries are invited to lay this announcement before their members, and the co-operation of the legal, medical and public press is respectfully solicited in bringing the subject to public attention.

CLARK BELL, President, 57 Broadway, N. Y. Albert Bach, Secretary, 140 Nassau St., N. Y.

The Alkaloid of the Testicular Juice.—We are informed by the Weekly Medical Review that, in pursuance of the Brown-Sequard elixir theory, Parke, Davis & Co. have isolated this alkaloid, and experiments conducted in their laboratory go to show that it is a powerful physical and mental stimulant.

An Interesting Illustration of Legitimate Mind-Cure, as practiced by a reputable physician, may be seen in Dr. J. C. Mulhall's account of the cure of the falsetto voice, as reported by him in the August number of the American Journal of the Medical Sciences.

REVIEWS, BOOK NOTICES, &c.

The Medico-Scientific Enterprise of Certain American Newspapers is becoming matter of note. Aside from their too often indelicate necroscopic headings, such as "Climbed the Golden Stairs," "Jacob's Gone Up the Ladder," "Last Call of a Vanished Auctioneer," etc., etc., the medical enterprise of such modern metropolitan dailies as the New York Herald is quite remarkable, and when kept within certain bounds, quite commendable.

The London Edition of the New York Herald is on our table, and here are some samples of the manner in which it pays its respects to medical and medico-legal science:

SMALLPOX AND THE ANTI-VACCINATION QUESTION.

At the moment when the International Congress of Anti-Vaccinators is being held at Paris, whose members will endeavor to cast a doubt on one of the grandest discoveries of modern times, and as their discussions cannot fail to influence the public, it may not be out of place to say a few words about what smallpox was before vaccination, and what it has become to day; and this is what M. Gallois has just done in a work of the very highest interest.

In the last century a large number of historical personages were disfigured by smallpox-Louis XV., Voltaire, Mirabeau, Danton, etc.- and in certain countries no one was allowed to marry who had not previously had smallpox. At the Quinze-Vingts Hospital, that is given up to the blind, one-third of the occupants owed their loss of sight to smallpox. When the Spaniards carried smallpox into Mexico the epidemic counted over three million victims. St. Domingo and Iceland were ravaged by epidemics which destroyed one-half of their inhabitants. La Condamine estimates that in the year 1720 alone 20,000 persons died in Paris of smallpox. De Haen has computed that in sixty-seven years London lost 113,851 individuals. In fifteen years 144,194 persons died of it in Sweden. In the very year (1796) when Jenner discovered vaccination 3,549 persons died in London. The mortality by smallpox in Prussia in the same year was 24,680, and that of Prague 6,686 persons. At the present time in Paris 200 persons die each year from smallpox, that is, one in 10,000; the deathrate from smallpox is lower than from scarlatina.

It is not possible to attribute to any other cause than to vaccination this enormous diminution in the mortality. Here are two proofs. In 1870 the German Army, in which all the men had been re-vaccinated, only lost 300 men from smallpox; whereas the French Army, in which re-vaccination had not been fully carried out, lost more than ten times as many. In that same year the City of Montpellier was visited by an epidemic which killed one patient out of every seven. The inhabitants were re-vaccinated in all haste, and the epidemic was stopped abruptly. At

Lyons the yearly average of mortality by smallpox from 1874 to 1884 was 164. In 1884 a Vaccinal Institute was established, and the mortality fell to six in 1885, and to nine in 1886 and 1887. These demonstrations are as convincing as it is possible to be, and all the arguments of the anti-vaccinators will not be able to stand against them. Let also the case be called to mind of Esquimaux, who came a few years ago to the Jardin o'Acclimatation. When they reached Paris they were eight in number and had not been vaccinated, and they all died from variola-hemorrhagica. To-day all foreign persons that are brought to the Jardin d'Acclimatation are vaccinated, and none of them since then have taken the smallpox. I have no intention of denying that the germ of smallpox has perhaps become weakened as well in diffusion as in activity; that is an affair of personal opinion, and no scientific proof can be given of the fact; but that which is certain is that vaccination has made us refractory toward it.

Everyone knows the insupportable odor of iodoform, which is daily used, as well in surgery for dressing wounds as in medical cases to disinfect the intestinal tract, and in the treatment of consumption. Many a means has been proposed to disguise this penetrating odor, but no ope of them seems to have won the confidence of physicians. But here is now a new method which has the advantage, in masking its odor, of associating with iodoform a substance eminently antiseptic, that is to say tar. MM. Ehrmann, of Vienna, and Negel, of Jassy, were the first to remark this property in tar, and M. Konya found that by mixing with the iodoform ten per cent. of tar, one obtained a paste that had the smell of tar only. With five per cent. of tar the mixture remains a powder, and has entirely lost the tenacious odor of iodoform. In pharmaceutical preparations destined to be taken internally, tar can thus advantageously be added to iodoform, and M. Negel has obtained very good results from the use of the following pills in the treatment of consumption: Iodoform, three grammes; vegetable tar, fifteen grammes; extract of opium, 0.60 centigramme. This quantity should be divided into sixty pills of which three to six should be given each twenty four hours. This formula seems to me a good one, but I think that it could be made more efficacious by adding to each pill half a milligramme of arsenious acid and five centigrammes of tannic acid. Pills similar to these, that I have now used for many years, have given me most favorable results.

The London Edition of the New York Herald is on our table, and here are some samples of the manner in which it pays its respects to medical and medico-legal science:

REGARDING THE DANGEROUS ELEMENT IN ABSINTHE it is a curious and certainly an unexpected fact that abisnthe itself is not dangerous. Up to the present the harmful effects of the absinthe liqueur had been ascribed at one time to the alcohol which forms its basis; at another to the essence extracted from the plant, which imparts to the liqueur the aroma so much appreciated by its drinkers. The latter opinion hitherto counted the larger number of followers. But now M. Cadéac has just read a very interesting paper before the Academy of Medicine in which he demonstrates that the alcohol and the essence of absinthe can only claim a secondary tôle in the production of accidents arising from the use of absinthe

liqueur, and that the principal portion must be ascribed to other aromatic essences, such as the essence of fennel, of badian, and of aniseed, which are used in the fabrication of the said liqueur. The essence of aniseed ought more especially to be accused. When it is given separately it brings on all the serious accidents of absinthism, which are very much attenuated when, in a counter experiment, the alcohol and the essence of absinthe are given separately. So that in the place of the expression absinthism we should rightly put the word aniseedism. The practical deduction to be drawn from these researches, which were very skilfully carried out, is that it will be necessary in future to prohibit the use of these dangerous essences in manufacturing absinthe liqueur. Would not this prohibition be a means of limiting the ravages caused in the health of the public by a drink which has unfortunately entered into almost universal use?

MEDICAL JURISPRUDENCE AND EXPERTS' TESTIMONY IN CRIMINAL CASES.—
OPINIONS OF FRENCH DOCTORS ON THE SUBJECT.

By what means are the interests of both society and the parties under accusation to be protected in medico-legal cases submitted to experts? This question, which the controversy aroused by the testimony of the experts in the late Maybrick trial has brought before the public in the most vivid manner, has just been subjected to a most searching discussion at the recent International Congress on legal medicine. In consequence it will not be out of place to sum up in a few words the opinions advanced upon the subject by the most competent authorities, and to publish the conclusions that the Congress adopted at the close of the debate.

MM. Demange and Guillot, who had been appointed on account of their great legal competence, to make a draft of the set of conclusions that might serve as a basis for the discussion, adopted the principle of having an expert on the side of the defense, a principle in favor of which a strong current of public opinion has set in in many countries. In France its influence is recognized, since a law in favor of it is now before the Senate. This law bears on the method of naming experts, on the choice of these experts, and on the manner in which disagreements arising among them may be settled. Mr. Pleminckx, of Brussels, asserts that the principle of having an expert for the defense has been adopted in Belgium, but that it is far from easy to carry it out in practice. The magistrates are not all competent to choose the experts. Furthermore, if the choice of the expert for the defense is to be left to the accused party, how will he be able to use his right of choice when he is in seclusion, and when, notwithstanding, the expert work will have to be done in the shortest possible time? To settle divergences in case of conflict, it would be necessary to institute some form of superior council of legal medicine. In M. Chaudé's opinion, the present experts are far from being always the auxiliaries of the prosecution, and half the time the official expert upsets the accusation before it has even come into court.

M. Lacassagne, of Lyons, adds that in the country it would be difficult to find several physicians sufficiently competent to serve in a contradictory debate of experts, and that at Paris the professor occupying the official chair of legal medicine, being one of the experts, generally on the prosecuting side, the expert for the defense will find himself placed from the outset in a position of moral inferiority in the eyes of the jury. Contradictory experts' testimony exists as a fact, since the attorney for the defense can always submit the report of the official expert to the judgment of a competent person. The best arrangement would be not contradictory expert testimony, but an assistant in certain special cases in which the official expert may not be thoroughly competent. M. Brouardel. of Paris, asserts that it is out of the question to oppose the current of opinion demanding contradictory expert testimony. But it will be hard to put it into execution. In cases of delicate chemical analyses that sometimes require three or four weeks' time, in which lab ratory will they be made? Are the two experts to work together or separately? The establishment of a superior tribunal of experts will be absolutely necessary, as the number of disputes arising will be considerable, especially at the beginning. Besides, an institution of this kind has now been working in Germany for several years. M. Moreau is quite willing that there should be two experts, but he demands that they should work together and render each other mutual assistance, and only draw up a single report. These two experts should be named by the examining magistrate; but if the defendant refuses to agree to one of them, this right should be granted him, it his reasons are of sufficient weight. M. Garnier, though of opinion that the majority of the members of the Congress are anxious to satisfy, the public demand, does not think that the principle of contradictory expert testimony should be adopted without restrictions: but Mr. Guittat replies that in the interest of science and truth the plurality of experts forms a check that we have no right to withhold from the defendant.

At the vote the first proposition was adopted in the following terms: "To guarantee the interests of society and the defendants there must be in all expert work not less than two experts. These experts shall be named by the examining magistrates. They shall have the same rights, shall be under the same oath, shall draw up a single report, and shall receive (qual compensation from the State."

In spite of the competence of the members who voted this proposition, I venture to remark that were it to be adopted by public authorities in its present form, it would but imperfectly protect the rights of the detendant; and as M. Lacassagne justly remarked, in any town where there is a professor of legal medicine he will always be chosen, and quite naturally, as one of the experts, and his hierarchical authority will always exercise an influence on the other expert, who, instead of acting as a check, will become a mere assistant. Finally, is it not hampering the rights of the defense to withhold from the accused the privilege of objecting to one of the experts, a privilege that M. Guittat had inserted in his original proposal? M. Moreau endeavored, but in vain, to pass an amendment bearing on this point.

The Congress then came to vote on a second proposition, drawn up as follows: "Except in cases requiring special competence, experts shall be chosen out of official lists drawn up by public authorities, and by the scientific bodies designated for that purpose."

The Congress then discussed the means of settling differences of opinions between two experts in case of disagreement, and adopted the following proposition:—"The system of the plurality of experts demands the establishment in the faculties of medicine of a superior council of legal medicine, whose duty it shall be to act as an ultimate court of appeal for disagreement between experts."

This proposition was adopted, in spite of the opposition of two members of the Congress. One of them, M. Dubost, asks simply that in case of disagreement between two experts a third should be appointed. The other, M. Bogelot, expresses himself as follows: "How will this superior tribunal be constituted? It cannot be made up of experts in practice, as they then may become, at the same time, judges and parties on trial. Legal medicine can only be learnt by practice. If, then, judges are appointed from men taken outside of the ranks of the experts, they will be incompetent."

The five following propositions were adopted without discussion in the form in which MM. Demange and Guittat had drawn them up:

"The examining magistrate must be present at all post-mortems and examinations, except in certain particular cases, in order to be in a position to supply the expert with information and facts capable of throwing light on his researches."

"The attorney for the defense shall be allowed to be present also, in order to point out to the expert the objections of the defense."

"A course of study covering the general principles of legal medicine shall complete, in the faculties of law, the study of criminal procedure."

"It is expedient, to facilitate the studies of legal medicine, to adopt, as an exception to the secrecy of the preparation of the case, that the postmortem shall take place before the students following the lectures (as the habit has already been formed), the judge still keeping his right of veto."

"It is advisable to form in institutions devoted to legal medicine, or in the record offices, archives and collections of objects that have served to convict criminals, under the direction of magistrates and experts."

These propositions are all very wise, and it is very desirable that they should be adopted by public authorities, with some few modifications of details; and, taken as a whole, no objection could be brought against them if the principle of the right of the defendant to refuse to agree to an expert could be added.

Besides being evidence of modern journalistic enterprise such subjects are really of public as well as professional interest and benefit; and the professional readers of such papers as the *Herald* actually get information on current medical thought, in a general way, through its pages, sometimes considerably in advance of the medical channels. Journalistic discrimination in matters medical, as to what ought and what ought not to be discussed in the columns of a newspaper, and how it ought to be presented is improving, just as the newspaper is itself the creation of a progressive evolution, and we may reasonably hope to see at no distant day all of our metropolitan dailies discussing proper medical matters for the public taste and welfare, in the same unobjectionable

way as the matters here d'scussed in the London New York Herald, but it is to be hoped that Brown-Sequard's Elixir will be given a rest. It is not a proper subject for elaboration in the columns of a newspaper.

SPINAL CONCUSS'ON.—This subject is just now attracting renewed attention. The July number of the ALIENIST AND NEUROLOGIST contained an interesting paper, by Dr. Ludwig Bremer, of St. Louis, on "The Study of the Traumatic Neuroses" (railway spine), and one by Dr. J. T. Eskridge, of Denver, Colorado, on the somewhat symptomatically related subject, "Spinal Irritation;" and now a book is announced on "Spinal Concussion," by Dr. S. V. Clevenger, of Chicago, with whose valuable contributions to neurological literature through our pages, our readers are quite familiar.

That Dr. Clevenger's book will be found worthy of a place with the contributions of Erichsen and Page, we have no doubt. It may heighten the reader's interest in the forthcoming book, to read the following preface, which the author has kindly permitted us to present in these pages, in advance of the publication of the book:

"A new class of injuries, that is frequently caused by railway accidents, can be studied to advantage in any large metropolis. Chicago being a great railway center naturally affords considerable material for such investigation; though its newness, and its consequent dearth of scientific and medical libraries, oppose obstacles to research that can only be overcome by labor and sacrifices not experienced by students in older cities.

"The need of a new work on Spinal Concussion is apparent in the scattered condition of the essays on the subject, and that the treatises now in use are twenty years behind the times.

"The recent scientific Franco-German contest, concerning the pathology of the disorder, has ended in an advance of our knowledge, but the change from a spinal to a cerebral explanation of the symptoms, and their inclusion with other widely different phenomena, resulting from wounds in general, under the title of 'Traumatic Neuroses,' appears to the author to be unjustifiable. An attempt has therefore been made in this work to carefully review the entire subject, with reference to anatomical derangements that will best explain the symptoms.

"That the spinal sympathetic nervous system is the main seat of the disease, and that, in consequence, the cord functions are deranged, accounts, in the author's opinion, for much, if not all, that has been hitherto unexplainable. These views are original and not heretofore advanced, for they are based upon quite recently discovered symptomatology, and an exclusion of previous errors in diagnosis, which would not previously have enabled any such conclusion to have been reached.

"The importance of electro-diagnosis in spinal ailments required the space and revision it is accorded in Chapter XI.

"The substitution of the name 'Erichsen's Disease,' for the various ambiguous and improper titles, should alone help to clear away wrong impressions; and concussion of the spine may hereafter be properly used, as causing meningo-myelitis, compression symptoms from vertebral dis-

locations or fractures, hemorrhages, etc., and it may, or may not, also

cause 'Erichsen's disease,' pure or complicated.

"The author regrets the unavoidable polemics of parts of the book, though it is by controversy that the truth often is evolved from error; and his strong feeling against the political corruption in our country, is explained by the opposition that exists to all progress by the mediocrity and ignorance in most of our public scientific and medical institutions, placed there by men of their own ilk. A spring cannot rise higher than its source.

"Unsparing criticism is invited, particularly as regards the author's pathological anatomy views, and communications or reviews sent to him will influence the arrangement of subsequent editions and be properly accredited to their writers.

"Central Music Hall, Chicago, October 15, 1889."

SAJOU'S ANNUAL.—This popular annual has introduced the following improvements in the issue of 1889:

1. Foreign weights and thermometric measurements have been reduced to those generally used in this country. Grammes have been reduced to ounces, drachms, grains, etc., and Centigrade degrees to Fahrenheit, both appearing side by side.

2. The dates of all journals referred to are mentioned in the text,

thus greatly facilitating research.

3. An index has been added to each volume, besides the complete triple index at the end of the entire work.

4. The "Therapeusis" column of the index, presenting a resume of all remedial measures introduced or recommended during the year, contains forty-eight pages more matter than the first issue.

5. Dosage not furnished by the original author, and therefore not to be found in the text, has been inserted by the editor of the therapeusis

column.

6. Instead of being fifty-four pages in length as last year, the index is one hundred and one pages long in this issue.

7. Four thousand quotations more than last year, received principally through the corresponding staff, increase in proportion the value of the work,

8. The practical worth of each article has been increased by giving a careful description of treatment, operations, etc., and by the reduction in weights, thermometric measurements, etc., mentioned above.

9. Two departments have been added, "Examination for Life Insurance," and "Railway Neuroses," subjects of great importance to a large

proportion of the profession. And finally,

10. The volumes have been made less clumsy, notwithstanding the greater amount of matter presented, by closer calendering of the paper and avoidance, as much as possible, of all blank spaces and repetitions in the text.

The Annual keeps up to professional expectation in the present issue.

F. A. Davis is the publisher: Philadelphia, New York, San Francisco, Chicago and London.

THE KEMMLER CASE.—In the Medical Times and Register, T. D. Crothers, M. D., Superintendent Walnut Lodge, Hartford, Conn., discusses this case, the first capital offender sentenced under the new law of New York, prescribing execution by electricity as the death penalty.

William Kemmler was tried and convicted of murder at Buffalo, New York, May 10th, 1889, and sentenced to be executed by electricity.

Kemmler was about twenty-four years of age, a huckster, came from Philadelphia, Pa., where he was born, to Buffalo, in 1888, deserting his own wife, and bringing with him another man's wife as his paramour. They frequently quarreled, and the woman had threatened to kill him if he did not stop drinking. He had drank to intoxication every night for a long time before the commission of the crime. One morning he got up, went to the barn and gave some order about the care of his horses, then went to the house, and after a quarrel, struck this woman with a hatchet, inflicting twenty-six wounds, from which she died in a few hours. He told a lady who came to the door that he had killed his wife and would take the consequences. He went with another man for a doctor, and drank on the way, and finally gave himself up in a saloon soon after. He appeared dazed and silent after the commission of the crime for some time. He was given two dollars' worth of spirits at the station, and made several contradictory statements. Was examined by physicians and pronounced sane, only suffering from excessive use of spirits. The murder was committed the 29th of March. He was indicted and put on trial May 6th for murder. The testimony was a most startling history of excessive use of spirits by both the prisoner and his friends. It appeared that he had drank from twenty to thirty times a day, and often on a wager to show his power of out-deinking other men. He had been successful as a trader, but generally drank every night, and sometimes was very stupid. His father drank to excess at times all his life, and his mother died of some form of insanity in his infancy. He was brought up on the street and began to drink beer at ten years of age. Had syphilis early in life and frequent attacks of it up to the time of the murder. He was of small stature, low-browed, small, irregular brain, eyes sunken and unsteady, with a stealthy, suspicious look.

He has a hesitating, idiotic way of talking in a whining undertone, and is clearly dull of comprehension. He has always lived in the lowest surroundings, and has a defective brain development. His two brothers clearly resemble him in defective, irregular shaped heads and bodies. The prisoner had delirium tremens several times. His father also suffered from this at different times in his life.

Dr. Crothers, as an expert, testified that the prisoner was an alcoholic dement and irresponsible maniac, basing his conclusions on the following facts:

1. He inherited an alcoholic diathesis and predisposition to use spirits from the slightest provocation. His inebriate father and insane mother entailed upon him brain defects from which he could not escape.

2. His early life of neglect, and early use of beer, poor, irregular food, no training, bad hygienic surroundings, all favored the growth of alcoholic excesses.

3. The frequent attacks from syphilis and the excessive use of alcohol, which during the last two years had increased greatly, were all conditions which would break up the normal sanity of any one, particularly, if he inherited mental defects from his parents.

4. The cool, insane-like character of the murder, killing his paramour with a hatchet, striking twenty-six blows in different parts of the body and head, when a saner mind would have struck but one blow, then giving himself up, with no effort to escape or deny the crime.

5. He had been intoxicated the night before the crime; and had for a long time been jealous of this woman. The morning of the crime he appeared dized, like one who had not recovered from the effects of the alcoholic excess the night before; talked about the crime, then later denied all memory of it. He had been drinking continuously for the vear and more that he was in Buffalo, and also a much longer time before he came to Buffalo to live.

6. His conduct in the jail and during the trial showed no clear comprehension of his crime or its consequences. His idiotic appearance, together with the history, confirmed all the above conclusions.

The State assumed that, as he had conducted his busine sof a street peddler of vegetables with fair success, and showed some good reason in buying, and was not considered by his associates as anything more than a hard drinker, who sometimes did very unusual things when intoxicated, he must be sane and responsible for the crime. The heredity was ignored, and the crime was only considered as brutal and vicious, and not lacking in any way the ordinary comprehension of a sane man. Two physicians thought that there was no evidence of any form and degree of insanity, and no appearance of idiocy or dementia in his manner. They swore that the use of alcohol to excess did not necessarily impair the brain or destroy the consciousness of right and wrong. The demented appearance of the prisoner was thought to be simulation of insanity.

Dr. Crothers comments on this case as follows:

"Such a case should have been sent to prison for life, for the reason that no other place is open to receive him. Law and technical psychology would differ about his mental condition and shut him out from the insane asylum. This case has become celebrated as to how the death penalty shall be inflicted. The trial and verdict of the jury were a disgrace to the intelligence and common sense of our present civilization.

"This, like many other cases, shows the need of a larger, more accurate, scientific study before we can approach to any degree of justice in the treatment of criminal inebriates.

"1. The legal treatment of insanity has changed in obedience to a

more accurate knowledge of the brain and its diseases.

"2. The legal treatment of inebriety is unchanged to-day. Although it occupies two-thirds of the time of courts, all teachings of science and a larger knowledge of the inebriate and his malady are ignored.

* "7. To hold such men accountable for their acts, and by punishment expect to deter them from further crime, and by such punishment •heck others from similar crime, is an error which both scientific teaching and experience point out.

"8. The object of the State, through the law, is to protect society and the individual; but if the execution of the law-breaker fails to accomplish this end, the laws are wrong.

"9. The unfounded fear that the plea of insanity in crime, and the failure to punish, is an encouragement for further crime, is flatly contradicted by statistics.

"10. Among the mentally defective, the insane and inebriates, the death rate is followed by an increase rather than a diminution of crime.

"11. The inebriate should never be hung for crime committed while under the influence of alcohol.

"12. The method of punishment is never deterrent, but furnishes an attraction for other inebriates, who commit similar crime in the same way, following some law of mental contagion.

"13. The inebriate murderer should be confined the rest of his life in a military work-house hospital. He should be under the care of others, as incapacitated to enjoy liberty and incompetent to direct his thoughts or acts.

"14. A change of public sentiment and law is demanded, and a readjustment of theory and practice called for. The criminal inebriate occupies a very large space among the armies of the defective who threaten society to-day, and his care and treatment must be based on accurate knowledge, not theory.

"15. Inebriate murderers should never be placed on public trial, where the details of the crime are made prominent, or the farcical questions of sanity are publicly tested. They should be made the subject of private inquiry, and placed quietly in a work-house hospital, buried away from all knowledge or observation of the world.

"16. The contagion of the crime and punishment would be avoided, and his services might repair some of the losses to society and the world."

THE "TIMES AND REGISTER," which under its new management represents the former Philadelphia Medical Times, The Medical Register, The Dietetic Gazette, The Polyclinic, The American Medical Digest, and now published under the auspices of the American Medical Press Association, thus discusses the cereb al localizations:

"The most recent complete resume of the subject is the paper entitled 'Cerebral Localization in its Practical Relations,' by Dr. Charles K. Milis, and read before the Congress of American Physicians and Surgeons at Washington, September 19th, 1889. In the early part of the present century, Gall, Bouillaud and Broca located certain special functions, basing their views entirely upon clinical and pathological phenomena. Broca's speech center has remained undisputed to the present day. J. Hughlings-Jackson, in 1864, suggested that certain convolutions gave rise to certain movements which are under the immediate control of the mind. This suggestion was shortly followed by the researches of Fritsch and Hitzig, which settled to a certainty the truth

of the localization theory, and gave immortality to their own names. Putnam and Braun, unknown to each other, were performing similar experiments and arriving at similar results in the year 1874. investigators exposed the brain in the dog, and with the minimal current strength of electricity obtained certain definite movements. They then removed a slice of the cortex, and upon a reapplication of the current obtained no response. Turning back the cortical flap and applying a slightly increased current to the surface, still intact, the same muscular contractions were reproduced. The separate researches of Weir, Mitchell, Burdon-Sanderson, Bartholow, Wood, Ott, and others, as well as the clinical studies of Sir Crichton-Brown, Spitzka, Starr. Seguin, Park and Macewen, had all tended to strengthen the theory of special cerebral centers. But it remained for Ferrier, Horsley and Schäfer, who gave special study to this question, and who experimented with lower animals upon a vast scale, to not only establish the correctness of the localization theory, but to quite definitely settle the positions of the various centers. With a few exceptions of minor importance, the views of these observers are generally held at the present day. As with all new discoveries, so here there are opposing views. Goltz follows the teachings of Flourens, and believes that the encephalon is a single uniform organ, and that its component parts can only act as a whole. Luys and Munk side with Ferrier in clearly defining the areas of the brain, and so considering the organ as strictly a composite one. Others agree with Exner and Luciani in maintaining that there is an overlapping of the centers, so that while their positions may be indicated in a general way, they cannot be sharply separated one from another. This last view is largely based upon the fact that in motor paralysis, due to a lesion of some cortical center, there is an equivalent loss of sensation in the same part. But, as has been aptly argued, the paralysis itself would prevent any expression of pain, even did the animal preserve its sensibility; and furthermore, sensation, whether muscular or cutaneous, is a treacherous symptom at all times to base any reliable observations upon, for people feel differently at different times and under different circumstances. As Dr. Mills declares: 'the neurologist and surgeon must, therefore, depend on motor symptoms alone in fixing the site for operation in cases in which motor symptoms are definite. When positive sensory symptoms are present, they should regard these as indicative of the extension of the lesion towards either the limbic lobe or the posterior parietal convolutions; or, the involvement of the fibers going or coming from these gyres in the corona radiata.'

"Without attempting to go more fully into the subject of localization, for the space of an editorial is far too short to do it, or even the many investigators of it, anything like adequate justice, we will say generally that the concensus of opinion places the sensory centers at the posterior and basal lobes of the brain; the motor above the Sylvian and along the Rolandic fissures, and the psychic in the anterior lobes. If man went about on all-fours, as the lower animals do, these centers would correspond pretty nearly to the relative positions of the sensory

and motor tracts of the cord.

"An interesting question just in this connection is the center for the higher mental faculties and the possibility of localizing the lesion in various forms of insanity. No doubt now remains but that the cortex is itself the organ of the higher faculties; and since mentalization is itself but the combined action of motor and sensory conceptions in the abstract, its seat is in all probability commensurate with the entire cortex. The cortical gray substance, however, is made up of a number of layers, and a few observations seem to faintly indicate that certain of these layers are concerned in the special acts of mentalization.

"If the practical results of all this investigation upon cerebral localization were limited only to the cure of brain tumor—that most agonizing affection known to neurology—it would deserve the everlasting consideration of mankind. But relief has followed operations upon the brain, guided by localization, in cyst, fracture, abscess, hemorrhage and discharging cortical areas. Suffering has been mitigated and life saved. Even in circumscribed epilepsy the majority of operators consider the permanent paralysis following excision of a cortical area preferable to the continual epileptic attacks, Macwen notwithstanding. Even cases of insanity in which the lesion could be localized by the prominence of special symptoms have been benefited and cured by operation.

"Hence we may be proud of these late achievements of science. The flood of light thrown upon many obscure, so-called functional diseases, that used to be among the opprobria of Medicine, has afforded us knowledge worth exulting over, and which will doubtless restore many a wretched victim of pain and misery to perfect or comparative ease and comfort. Neurology, aided by surgery, is rapidly becoming one of the most exact scientific departments of Medicine, and out of exact knowledge we are justified in hoping for more exact and favorable results."—I.. H. M.

Through the Ivory Gate: Studies in Psychology and History. By William W. Ireland, M. D., Edin.; formerly of H. M. Indian army; Corresponding Member of the Psychiatric Society of St. Petersburg, and of the New York Medico-Legal Society.

"This book is written in prosecution of the views stated in 'The Blot on the Brain.' The historical and psychological studies may be considered as a continuation of the papers in that book on Mohammed, Joan of Arc, Mohammed Toghlak, and others. All the characters described in the present, in the author's opinion, suffered from some mental derangement. They were led away by delusions or uncontrollable passions from the right comprehension of things, or the right line of conduct. In figurative language, they were visited by specters which passed through the Ivory Gate. For those unlearned in Greek and Latin it may not be superflous to observe that the earliest allusion to this fancy occurs in Book XIX. of the Odyssey, line 562, which is thus translated by Pope:

'Immured within the silent bower of sleep,
Two portals firm the various phantoms keep:
Of ivory one; whence flit to mock the brain,
Of winged lies a light fantastic train:

The gate opposed pellucid valves adorn, And columns fair incased with polished horn, Where images of truth for passage wait, With visions manifest of future fate.'

"Virgil, who delights to reproduce Homer's fine passages, makes Eneas pass from the Elysian fields out of the Ivory Gate (Eneidos, vi. 1.894):

'Sleep gives his name to portals twain,
One all of horn, they say,
Through which authentic specters gain
Quick exit into day,
And one which bright with ivory gleams,
Whence Pluto sends delusive dreams,'

Conington's Translation.

"Horace (Carminum, iii., Ode 27,) makes Europa say: 'Do I, in the waking state, deplore the baseness of my fault, or does some vain image, fleeing from the Ivory Gate, delude me innocent of any misdeed?'

"Amongst those who have furnished the author with information, or kindly supplied me with documents and other aids toward the composition of this book, I have to record my heartfelt thanks to Mr. Clark Bell, New York; Dr. D. Clark, Toronto; Dr. C. K. Clarke, of Kingston, Ontario; Dr. T. S. Clouston; Mr. George R. R. Cockburn, M. P., Toronto; Doctors J. L. Erskine, Deputy Surgeon-General; I. Kerlin, of Elwyn, Pa.; H. Kurella; M. Lovell, of Kingston, Ontario; J. A. Sewell; W. Pugin Thornton, of Canterbury, and Hack Tuke. In the course of the book, I take occasion to acknowledge information derived from other kind friends."

Case of Large Cerebellar, and Several Smaller Cerebral Hemorrhages. By Theodore Diller, M. D., Assistant Physician in the State Hospital for the Insane, at Danville, Pa.

From the Medical and Surgical Reporter, April 13, 1889, we take the following:

Mrs. D.—, widow, admitted into the Danville Insane Hospital, June 4, 1887; married twenty-two years, had attacks of epilepsy or apoplexy several years ago. When irritated she has threatened to jump out of the window. Alternate mental depression and excitement.

About a year after her admission to the hospital her powers of locomotion were slowly becoming impaired. A few months later the patient had a peculiar gait, taking short steps, with her feet dragging on the floor. She had many symptoms which appeared to be of an hys erical character; for example, she asked if she were not fatally ill, and whether she would live until morning. She asked for a piece of brown bread, or a soft-boiled egg, with as much earnestness as though it were a matter of momentous importance.

From June to September, 1887, she had nineteen convulsive seizures,

followed by greater or less mental lethargy or confusion. The aphonia on one or two occasions, was complete. The ataxia usually increased while the general motor power decreased.

Cerebrum, left side.—In the lower extremity of the ascending frontal convolution, a small reddish-brown clot was found of the size of a pea. In the ascending frontal convolution, near the longitudinal fissure, was another small clot, well organized. In the occipital lobe, near the junction of the parieto-occipital and longitudinal fissures, on the outer aspect of the brain, a rusty-brown, moderately firm clot, about the size of a shellbark, was found.

The principal points of interest in this case are as follows:

The vessels were atheromatous in numerous places, this condition being especially marked in the middle cerebrals.

The immense cavity in the cerebellum, with the contained clot.

The large number of old clots on the cerebrum.

The obscurity and complexity of the symptoms which the case presented.

The fact that such extensive destruction of brain matter was compatible with life.

Almost all the white matter and the included "arbor vitæ" of the left cerebellum was disintegrated. Evidently some morbid process had been active here for a long time prior to the death of the patient. Most likely hemorrhages had occurred here from time to time. Clots were formed. These broke down into pus and were reabsorbed; but the process of disintegration had also involved brain substance. Hence the large extent of the cavity. This process of retrograde metamorphosis also involved the blood-vessels of this region. The large clot which was found in the cavity was evidently of recent origin and due to the rupture of a vessel of considerable size. This hemorrhage, with the pressure which it caused in this region—and most likely too in the floor of the fourth ventricle—was doubtless the immediate cause of death.

That such extensive destruction of white and gray matter should produce as few disturbances as it did, seems to the author to be an argument in favor of the theory which Brown-Sequard recently advanced, that there are, for many, and perhaps all brain centers, supplemental centers. If the main or primary center be destroyed, the secondary or auxiliary center is capable of taking upon itself a good portion of the work of the primary center, and the extra work thrown upon the secondary center tends to develop its capacity and power, just as we see unusual or compensatory development of a leg or arm when its fellow has been removed. At least this seems to me a very plausible theory by which to account for the gradual disappearing and recurrence of the aphasia, from time to time, in the case just described, when at the autopsy an almost entire destruction of the speech center (lower part of left ascending frontal convolution,) was noted.

The gradual lessening of the ataxia, the temporary increase in the muscular power, and the decrease and subsequent increase of the power of volition, would all seem to point to a confirmation of the theory.

THE DIGESTION AND ASSIMILATION OF FAT IN THE HUMAN BODY.—An Epitome of Laboratory Notes on Physiological and Chemical Experiments Bearing on This Subject, by H. Critchett Bartlett, Ph. D. F. C. S., London.

This is an epitome of careful laboratory research on an important subject to physicians, conducted in a thoroughly scientific, satisfactory and convincing manner. The *brochure* may be obtained free of charge by applying to C. N. Crittenden, 115 Fulton Street, New York.

We give space to a portion of an interesting addendum (page 45), while

commending the whole as good reading, as follows:

"Urine and fecal excreta have been frequently submitted to me for examination by members of the medical profession, in cases where there was reason to believe a direct loss of fatty substance occurred through the kidneys or bowels.

"In certain morbid conditions I have found free fat or oil in the urine. It was not detected in most cases until after cooling, when it assumed a chylous or milky appearance. This usually happened without the presence of any considerable quantity of albumen. In other cases fat or oil was found which never showed itself to the eye, and these were invariably connected with phthisis, tabes, or nervous wasting. The quantitative estimation of these transparent fats always presented difficulties I could not account for. In drying the residues I experienced a loss of weight which continued as long as they remained in the drying chamber of the water bath; repeated weighing could not, therefore, be depended on to confirm the absence of the solvents. Since making the discovery of the soluble and volatile fatty matters produced by fermentation in the intestine, this discrepancy is explained, and I have no doubt, from samples more recently analyzed, that mere traces of soluble fat in the urine may frequently mark the earlier stages of many wasting diseases. To obtain a certain verification of this slight excretion, vapor distillation must be resorted to, and the most accurate manipulation is required to prevent the loss of such traces of soluble volatile fatty matter as are sometimes to be found at the commencement of the disease.

"Similarly, I now always submit the fecal matters to this, among other delicate tests. The result is that a false or secondary digestion of fat is often found to have taken place in the lower bowel without any benefit being derived from it. On the contrary, it seems to denote one of the first symptoms of the degeneration of the natural fat-digesting organs. As this is of importance in pointing out a possibly unsuspected mischief, I have thought attention should be directed to the means analysis affords of confirming or removing uncertain suspicions as to such morbid conditions. These may or may not be intimated by a slight glistening film, either on the surface of the solid excreta or floating in the urine.

"Interesting as such investigations are in supplementing the foregoing inquiries, I have had to regret the interruption lately of experiments extending over nearly seven years. The unexpected enforcement of certain rules of Gray's Inn has practically closed my laboratory there for these purposes. I have, however, now made special arrangements at my new laboratories in Duke Street, Grosvenor Square, which will, I hope,

enable me to complete at least some of the other physiological experiments and to proceed with analyses such as have been lately forbidden to me."

It does not detract from the value of this paper that it is sent out gratuitously by the Hydroleine people. On the contrary, it is commendatory of their judiciously chosen advertising methods. The chemistry and physiology of digestion as portrayed in the book will well repay perusal as, possibly, information to some, but to others and to all, valuable reminders of essential truths to be borne in mind in the practice of medicine.

BULLETIN OF THE INTERNATIONAL MEDICO-LEGAL CONGRESS OF NEW YORK, June, 1889.

This volume is in press and will shortly be issued, and will contain the Transactions of that body, its officers, members, and original papers by Dr. Norman Kerr, of London; Dr. W. W. Godding, of Washington; Ex-Chief Justice Noah Davis, of New York; Clark Bell, Esq., of New York; Prof. Vaughan, of Michigan; Prof. Formad, of Philadelphia; A. Wood Renton, Esq., of London; Moritz Ellinger, Esq., of New York; Dr. Le Monnier, of New Orleans; Dr. T. D. Crothers, of Connecticut; Dr. Carl Horsch, of New Hampshire; Dr. C. H. Hughes, of St. Louis; Dr. Samuel Wesley Smith, of New York; Austin Abbott, Esq., of New York; Judge Somerville, of Alabama; Theo. H. Tyndale, Esq., of Boston; T. Gold Frost, Esq., of Minnesota: Prof. John J. Reese, of Philadelphia; Hon. Daniel Jordan, of New Brunswick; Prof. Bauduy, of St. Louis; J. Mount Bleyer, M. D., of New York; J. Murray Mitchell, Esq., of New York; Harold P. Brown, Esq., of New York, and others.

It will be furnished members of the Congress, or those who enroll as such. The enrolling fee is \$3, which can be sent to Clark Bell, Esq., President of the Congress, No. 57 Broadway, New York City, to either of the Secretaries, or to any member of the Medico-Legal Society.

All students of Legal Medicine, or persons interested in the progress of the science, are invited to enroll as members of the congress, which will hold its second session in 1892, on the occasion of the American International Exposition.

CLARK BELL, of New York, President.

MORITZ ELLINGER, of New York, FRANK H. INGRAM, "" "Secretaries. WM. J. Lewis, of Connecticut,

Text-Book of Animal Physiology. By Wesley Mills, M. A., M. D., M. R. C. P. (Eng.), Professor of Physiology in McGill University, and the Veterinary College of Montreal.

The first edition of a new text-book of Animal Physiology, with introductory chapters on general biology, and a full treatment of reproduction for students, of human and comparative (veterinary) medicine and of general biology, with over five hundred illustrations, published by Appleton & Co., New York, is on our table. It will receive notice in our January number.

The experience and repute of the author as a teacher in one of the best of British colleges, justifies the expectation of a good work on the

author's favorite subject, which expectation is verified in the examination we have made of the book before us.

The author begins with the discussion of the cell and proceeds in a lucid and instructive manner, through reproduction, to the description of organic function, and we feel fully justified in commending this physiology, even before we have read it through.

The American Catholic Quarterly Review, published and printed by Messrs. Hardy & Mahoney, of Philadelphia, has been a regu'ar visitor to our table for many years, and it is only due to inadvertence on our part, chiefly because this publication is not in our special (medical) line, that this valuable theologico-literary review has not hitherto received notice at our hands. Of all the many Catholic publications which from time to time have fallen under our ken this review is certainly the most scholarly. It is or ought to be, to Catholics, what the Princeton Review and journals of its class are to Protestants. It deals in a masterly manner with historical and literary questions bearing upon religion, art, moral and social science as related to the Catholic Church and questions of State likewise, in similar relations, in a manner which ought to be peculiarly acceptable and edifying to all Catholics. As one of its readers, ex cathedra, we confess to many hours of agreeable entertainment and instruction through its pages.

The April number contains a zealous and powerful arraignment of the delinquencies of Protestantism in art, under the caption of "Protestantism and Art," by our worthy fellow-townsman, Peter L. Foy, Esq., who in this essay gives ample evidence that he has lost none of his mental vigor in his restful days of age and retirement from business.

The American Catholic Quarterly appears to be, in its every aspect, scientific, literary, historic and theological, a vigorous defender of the faith of Catholics, and as such the Catholic readers of the ALIENIST AND NEUROLOGIST will always find it entertaining, and the non-Catholic reader will likewise find in its pages much enlightenment as to the attitude of the Catholic Church towards the religio-social problems of the past and present, to politics, the arts and sciences.

AMONG OUR EXCHANGES, Science comes to us filled, as usual, with matters of general scientific interest, and with some subjects of special interest to the student of psychology and psychiatry. Chief among the former is a graphic description of a remarkable electric light plant, giving an account of the Heisler dynamo plant at Murseilles, Illinois, embracing a circuit of forty-five miles.

The subjects of special interest to students of psychiatry, psychology and neurology, are, "New Experiments upon the True Relations of Mental Processes," and "The Nature of Negative Hallucinations," the latter of which we transcribe:

"M.J. Foutan has recently devised an interesting method of showing that in hypnotism the physiological processes remain, while their psychic interpretation is altered. If a subject be told that he sees nothing

red, every thing of this color falls out of his mental horizon, and we have an ordinary instance of a negative hallucination. If, now, the red object viewed be a red light, and if we suggest to the subject that when a bell is sounded he will again be restored to normal vision, and if, as the bell is sounded the light is put out, the subject sees a light of the complementary color, green, just as he would have done when normally viewing a red light. While the brain refuses passage to the sensation of red, the retina is impressed with it, and re-acts to it, just as though the action were normal in every respect."

HE FED FEVERS. By John G. Johnson, M. D., Brooklyn, N. Y. This is a three-page pamphlet, giving the great Graves due credit for the great innovation in the treatment of fevers, made by the distinguished Irishman. The pamphlet bears the imprint of a malted milk company.

Milk and Malt are good nutrients. We have used them both in combination, with great satisfaction, before advised of their value by a proprietary company.

To feed fevers is good-to feed editors is better. They work better when fed.

Send us your check and your "ad.." gentlemen of the Malted Milk Company, and our pages shall tell the profession of all the world, about your special brand of this excellent nutrient combination. Greenbacks get the milk out of such a cocoanut better than a sledge-hammer.

The Johns Hopkins Hospital Bulletin.—The Trustees of the Johns Hopkins Hospital announce the issue of a monthly publication, to be known as the Hospital Bulletin, to contain announcements of courses of lectures, programmes of clinical and pathological study, details of hospital and dispensary practice, abstracts of papers read, and other proceedings of the Medical Society of the Hospital, reports of lectures, and all other matters of general interest in connection with the work of the hospital. Nine numbers will be issued annually. The first number will appear in November, 1889. The subscription price will be one dollar per year. Subscriptions may be sent to the Publication Agency of the Johns Hopkins University, Baltimore, Md.

THE MEDICO-LEGAL JOURNAL.—The success of this journal, under the able and judicious management of its editor, Mr. Clark Bell, of New York, is gratifying to all friends of medico-legal advancement.

The Medico-Legal Journal will soon present its readers with several groups—photo-engraved—of eminent alienists and jurists, which will interest the readers of the ALIENIST.

It may likewise interest some of our readers to know that the time on the prize essays called for by the Medico-Legal Society has been extended to January 1, 1890.

DR. I. N. Love, of St. Louis, is out with a prospectus announcing the appearance, in January next, of a new journal, to be called *The Medical Mirror*, published monthly, at St. Louis. Dr. Love is so really among the

foremost medical journalists of the country, that the success of his new venture is assured even before the start.—Northwestern Lancet.

We have not seen the prospectus of the new enterprise, but we have no doubt it will be bright, reflective and lovely, as its name and the name of its editor implies—full of sentiment and wise medical reflections.

THE CARE OF THE FEMALE BREAST DURING LACTATION, is a good subject for Dr. Morris and Dr. Marsh to write about, but the care of the same part of the female anatomy in the ball-room and on other decolette occasions, would be a still better subject for medical pens.

The Influence of Sewerage and Water Pollution on the Prevalence and Severity of Diphtheria. Read before the Section of Pediatrics, Ninth International Medical Congress, Washington, D. C., September, 1887, by Charles Warrington Earle, M. D., Professor of Pediatrics, Woman's Medical College, and of Obstetrics, College of Physicians and Surgeons, Chicago.

The Influence of the Nervous System on Cell Life (Metabolism). By T. Wesley Mills, M.A., M. D., Professor of Physiology, M'Gill University, Montreal. A timely, temperate and true conception of the interrelation of nerve to power, and cell to nerve force, so far justified by our present knowledge of the facts.

On the Healing of Aseptic Bone Cavities by Implantation of Antiseptic Decalcified Bone. By N. Senn, M. D., Ph. D., Attending Surgeon to the Milwaukee Hospital; Professor of the Principles of Surgery and Surgical Pathology in the Rush Medical College, Chicago, Illinois.

Observations in Vienna. The General Hospital, Billroth, Carl Braun, Bandl, and others. By Charles Warrington Earle, A. M., M. D., Professor of Obstetrics, College of Physicians and Surgeons, Professor of Diseases of Children, Woman's Medical College, Chicago.

On the Alterations of the Myocardium, Following Section of the Extra-Cardiac Nerves. By G. Fantino. Translated from "Il Pisani," by Dr. Joseph Workman, with Notes by Dr. Wesley Mills.

Hypnotism: Its History and Present Development. By Fredrik Björnström, M. D., Head Physician of the Stockholm Hospital, Professor of Psychiatry, late Royal Swedish Medical Councillor.

Remarks on Institutions for the Insane, with Special Reference to the Most Natural and Satisfactory Methods of Serving Food to their Inmates. By H. A Buttolph, M. D., LL. D., Short Hills, N. J.

Das Höhenklima, in Meteorologischer, Physiologischer und Therapeutischer Beziehung. Von Dr. August Ladendorf. Besondere Beilage zur Deutschen Medizinal Zeitung, Berlin.

The Theory and Practice of the Ophthalmoscope. A Hand-Book for Students. By John Herbert Claiborne, Jr., M. D., Instructor in Ophthalmology in the New York Polyclinic.

Infant Feeding. By Charles Warrington Earle, M. D., Professor Diseases of Children, Woman's Medical College, Professor Obstetrics, College Physicians and Surgeons, Chicago.

America, or Christianity in Our National Life. An address by Rev. John Henry Barrows, D. D., of Chicago, before the Presbyterian Social Union of St. Louis, June 4, 1889.

A Report on the Insane Asylums of Missouri. By Frank C. Hoyt, M. D., Third Assistant Physician and Pathologist to State Lunatic Asylum, No. 2, St. Joseph, Missouri.

The Treatment (not Preventive) of Puerperal Fever. By Charles Warrington Earle, Professor of Diseases of Children and of Clinical Medicine, Woman's Medical College.

Practical Notes on Urinary Analysis. By William B. Canfield, A. M., M. D., Chief of Throat and Chest Clinic, and Lecturer on Normal Histology, University of Maryland.

Policencephalitis Superior (Nuclear Ophthalmoplegia) and Policomyelitis. By B. Sachs, M. D., Professor of Mental and Nervous Diseases in the New York Polyclinic.

An Experimental Study of Intestinal Anastomosis, with some Practical Suggestions as to a Modified Technique. By A. V. L. Brokaw, M. D., of St. Louis, Mo.

New Series of Metric Test-Letters and Words for Determining the Amount and Range of Accommodation. By Charles A. Oliver, M. D., of Philadelphia.

Circulatory and Sensory Disorders of Neurasthenia. By J. H. McBride, M. D., Medical Superintendent Milwaukee Sanitarium for Nervous Diseases.

Speech of Hon. Alfred M. Waddell, of Counsel for Prosecution, in the Trial of Dr. Eugene Grissom, Supt. of the N. C. Insane Asylum, July 18, 1889.

Argument of Spier Whitaker, Esq., of Counsel for Prosecution, in the Trial of Dr. Eugene Grissom, Supt. of the N. C. Insane Asylum, July 17, 1889.

Retained Debris as One of the Causes of Puerperal Fever. The Intra-Uterine Douche and Curette. By Charles Warrington Earle, Chicago.

Address of President C. W. Earle, delivered at the Thirty-ninth Annual Meeting of the Illinois State Medical Society, May 21, 1889.

A year's Experience with Apostoli's Method, with Report of Cases. By A. Lapthorn Smith, B. A., M. D., Montreal.

A Basis for Sanity and Insanity, and Classification of the Insane. By H. A. Buttolph, M. D., LL. D., Short Hills, N. J.

Experience and Incidents of 691 Obstetrical Cases. Presentations and Mode of Delivery. By Dr. N. Guhmar, M. D.

The Menace of Plutocracy. A Speech by Thomas G. Shearman, in Masonic Hall, Portland, Ore., June 17, 1889.

Cirrhosis of the Pancreas; or Pancreatic Anæmia. By Charles Warrington Earle, M. D., Chicago, Ill.

Suicide and Legislation. By Clark Bell, Esq., President of the Medico-Legal Society of New York.

The Tampon as a Dressing in Suppurative Troubles of the Middle Ear. By M. D. Jones, M. D.

Monomania. By Clark Bell, Esq., President of the Medico-Legal Society of New York.

Dr. Hayden's Viburnum Compound, with the endorsements of five thousand physicians.

Ninth Inaugural Address of Clark Bell, Esq., as President of the Medico-Legal Society.

A Study of Suicide. Its History in Ancient and Modern Times, By Dr. W. B. Clarke.

Expression in the Treatment of Trachoma. By A. E. Prince, M. D., Jacksonville, Ill.

Cephalæmatoma of the New-Born. By Charles Warrington Earle, M. D., Chicago.

Pelvic and Abdominal Drainage. By David Prince, M. D., of Jacksonville, Ill.

Antiseptic Obstetrics. By Charles Warrington, Earle, M. D., Chicago, Ill.

Primary Dementia, with Description of Two Cases. By W. P. Spratling, M. D.

Therapeutischen Notizen, Deutschen Medizinal-Zeitung, Berlin.

The Fairchild Preparations of the Pure Digestive Ferments.

A Statement to the Friends of the N. C. Insane Asylum.







